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FINAL REPORT BEST TECHNICAL APPROACH ANALYSIS (BTA) FOR FORCE PROVIDER WASTEWATER MANAGEMENT

7 JULY 1994

Prepared for US Army Belvoir Research, Development and Engineering Center under contract number DAAK70-92-D-0003, DO 0036.

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INTRODUCTION

0.1 BACKGROUND

The US Army Quartermaster Center and School (USAQMC&S) has a requirement for a Best Technical Approach (BTA) Analysis to determine the most effective and cost efficient approach to meet the stated requirement for a Wastewater Management System for the Force Provider package. Data and information from this BTA is intended to support the development of the Cost and Operational Effectiveness Analysis (COEA).

This BTA is based on the Operational Requirements Document (ORD) for the Force Provider, which was approved on 23 June 1993, and the April 1994 draft of the Mission Needs Statement for the Mobile Wastewater Treatment Plant. The acquisition category (ACAT) for the Wastewater Treatment System has not yet been determined. However, it is anticipated to be ACAT IV, based on the expected value of the program in terms of procurement and R & D.

The purpose of this BTA is to assist the combat developer in the preparation of the COEA and provide decision makers at the Milestone Decision Review (MDR) with sufficient information and analysis to enable them to:

(1) Determine the Force Provider Wastewater Treatment System Approaches which offer the highest potential of meeting the stated operational requirement;

(2) Select the best acquisition strategy; and

(3) Determine whether continuation of the Force Provider Wastewater Treatment System program is justified.

BRTRC Technology Research Corporation was commissioned to provide the required BTA analysis under their existing operations research/systems analysis (ORSA) support contract with the US Army Belvoir Research, Development and Engineering Center (BRDEC), contract number DAAK70-92-D-0003, DO 0036. This BTA constitutes Deliverable 0004 of that Delivery Order.

0.2 FORMAT

No specified format has been established for a Best Technical Approach analysis. This BTA follows the format prescribed for a Cost and Operational Effectiveness Analysis (COEA) by Department of Defense Manual DoD 5000.2-M, Defense Acquisition Management Documentation and Reports, dated February 1991, Part 8, Attachment 1.

0.3 GENERAL TECHNICAL APPROACH

The general technical approach utilized during the preparation of this BTA is in accordance with the study process outlined in the Training and Doctrine Command (TRADOC) Pamphlet 11-8 (Draft). In particular the BTA utilizes the concept of Decision Cost developed in that TRADOC publication. The BTA was also conducted in accordance with the guidance set forth in the DoD 5000 series Directives and Instructions; relevant Army Regulations and AAE, Department of the Army (DA), TRADOC, and Army Materiel Command (AMC) memoranda and guidance in effect on or before the information cutoff date for this study (15 May 1994). The BTA includes information derived from other current program management documents that apply to Force Provider and to the Force Provider Wastewater Treatment System and references those documents.

0.4 NATURE OF THIS REVISION

A Draft BTA was produced on 10 June 1994. A meeting of representatives from Force Provider, US Army Quartermaster Center & School, and Mobility Technology Center - Belvoir to discuss this draft was held at BRTRC on 20 June 1994. This Final Report incorporates changes approved at that meeting as well as individual changes requested by Force Provider and by Mobility Technology Center - Belvoir.

0.5 SUMMARY

Since this BTA follows the DOD format for a COEA, Section 4 presents a summary of the results and is intended as an Executive Summary of this report. The Recommendations are on page 4-9.

SECTION 1

THE ACQUISITION ISSUE

1.1 NEED

1.1.1 General

The Army needs a sound wastewater management plan for the Force Provider package. Developing and executing such a plan will contribute to controlling the potential health threat posed by waste-borne diseases in the field and will also satisfy environmental regulations and concerns, as directed in Defense Planning Guidance.

1.1.2 Background

The need for the Force Provider resulted from support deficiencies identified during Operation Desert Storm (ODS). The Chief of Staff, Army stated that quality of life is a crucial element in improving overall combat readiness and that the Army could have done better during ODS in providing living and working conditions for soldiers. (Reference Mission Need Statement Summary, Operational Requirements Document (ORD) for Force Provider approved 23 June 1993, Section 1.c.)

The Force Provider package is a tent-based facility developed to give the front-line soldier a brief respite from the rigors of field operations in a combat theater. Specifically it is designed to provide each soldier with three hot meals a day, laundered clothing, environmentally controlled shelters, showers, modern latrines, and morale, welfare, and recreation facilities. Conceptually, Force Provider is similar to the US Air Force "Harvest" family of systems.

Force Provider will be air transportable, containerized, and modular in order to enhance its deployability, transportability, and flexibility. Each Force Provider package will contain all material necessary to provide food, billeting, and hygiene to 3,300 soldiers per rotation. It will be composed of six 550-soldier modules, with each module capable of independent operations. The separate modules of Force Provider are designed primarily for use in the division support area to provide rest and recuperation for forward deployed units. However, the modules may also be deployed along MSR's to provide convoy support and at aerial or sea Ports of Debarkation to facilitate force reception. In addition to these support missions in a theater of operations, Force Provider is also intended to support disaster relief and humanitarian missions. (Reference Operational Requirements Document (ORD) for Force Provider approved 23 June 1993, Section 1.a.)

In providing support in all these situations, Force Provider produces considerable volumes of wastewater from the showers, laundries, kitchen, and latrines. At present the preferred and most cost effective solution for handling this wastewater is through host nation

support. Typically, the wastewater is introduced directly into local sewage systems or collected and hauled away by local contractors. When host nation support is not available, field expedient methods such as seepage pits are used. However, these methods are no longer considered adequate with respect to human health and the environment and are no longer allowed in the US and in certain foreign countries. In addition, Force Provider may also be used at remote sites and in less developed countries where local support does not exist and in disaster areas where wastewater treatment systems are damaged or overloaded. Consequently the Force Provider Combat Developer, the US Army Quartermaster Center and School (USAQMC&S), has identified a requirement for treating the wastewater generated by the Force Provider System to an environmentally safe level for local discharge. The purpose of this Best Technical Approach (BTA) is to identify the best wastewater management plan or treatment method to meet the Combat Developer's requirements.

1.1.3 Terminology

This BTA examines several wastewater management options for dealing with the wastewater produced by Force Provider. Some, but not all, of these options involve equipment to treat the wastewater. A set of equipment designed to manage the Force Provider wastewater by treating it to an environmentally safe level for local discharge will be referred to in this report as the Force Provider Wastewater Treatment System (FPWWTX).

1.2 THREAT

Force Provider wastewater management or the Force Provider Wastewater Treatment System (FPWWTX) will not counter a threat capability directly. Instead, they are designed to improve combat effectiveness by reducing the exposure of the soldier to waste-borne diseases. It will also improve the quality of life of the soldier in the field and hence improve morale and combat effectiveness.

The Force Provider Wastewater Treatment System and its associated personnel are vulnerable to the entire spectrum of threat destruction and disruption capabilities at all levels of conflict across the operational continuum, from low through high intensity conflict. It is possible, though not very likely, that the system will be attacked as a target of opportunity. More likely, however, is collateral damage to the system as a result of an attack on a nearby target in the division and corps area. Destructive capabilities such as direct and indirect artillery or rocket fire, small arms fire, aerial delivered munitions, and sabotage can harm the system and its associated personnel. This capability also will be susceptible to chemical or biological contamination. Thus NBC operations and weapons effects may render the system temporarily unusable or may destroy it. (Reference Operational Requirements Document (ORD) for Force Provider approved 23 June 1993, Section 2 and Draft Mission Needs Statement for Mobile Wastewater Treatment Plant, Section 2.b.)

1.3 ENVIRONMENT

Force Provider wastewater management and the Force Provider Wastewater Treatment System (FPWWTX) will be used in a variety of operating environments consistent with Army doctrine and missions.

With regard to location in the theater of operations, the Force Provider system is designed primarily for use in the division and corps support areas to provide rest and recuperation for forward deployed units. As indicated above, however, it may also be deployed in rear areas, such as along MSR's and at Ports of Debarkation. In addition to these military support missions in a theater of operations, Force Provider is also intended to support disaster relief and humanitarian missions.

Force Provider will require support from available engineer units for site preparation, set up, and recovery. Supply and maintenance support and transportation above the organizational level, as well as other required combat support (CS) and combat service support (CSS) functions, will be provided by CSS units assigned or attached to the supporting Area Support Group (ASG) or Corps Support Group (CSG). Water supply and treatment support will be provided by the doctrinal water support structure. The Force Provider medical facility (aid station) will be operated by a medical unit assigned to the appropriate medical group or brigade and will provide all medical equipment and supplies necessary. Retail supplies and merchandise will be provided by the Army and Air Force Exchange Service.

With regard to climate, the Force Provider Wastewater Treatment System (FPWWTX) will be capable of being operated, transported, and stored in basic and hot climatic environments, as defined by AR 70-38, without additional protection such as shelters. (Reference ORD for the Force Provider approved 23 June 1993, Section 1.b.)

1.4 CONSTRAINTS

Force Provider wastewater management and the Force Provider Wastewater Treatment System must comply with industry and government safety and health hazard standards and must not present any uncontrolled or health hazards throughout the life cycle of the system. The system must permit cleaning, disinfection, and inspection of components. It must be capable of purifying "black water" from latrines and aid stations as well as "gray water" from laundry, shower, and kitchen facilities. The sludge produced by the system should be minimized.

The ORD for the Force Provider requires that the system be "equipped with or supported by a proper, environmentally sound waste storage, disposal, filtration, and/or treatment method." These terms are not defined, but for the purposes of this analysis it is assumed that the effluent from the system must meet the U. S. Environmental Protection Agency standards for secondary wastewater treatment. These effluent standards can be summarized as follows:

- The mean value of the 5-day biochemical oxygen demand (BOD) and suspended solids must not exceed 30 mg per liter.
- Removal efficiency must be greater than 85%.
- Fecal coliform average must not exceed 200 per 100 ml for a 30-day period or 400 per 100 mg for a 7-day period.
- The pH must be between 6.0 and 9.0.

Some individual states have higher effluent standards, but the Force Provider is designed primarily for use in overseas Theaters of Operations. It should be noted that deployments in the US -- in disaster relief operations, for example -- may require higher levels of treatment or waivers. (Reference ORD for the Force Provider approved 23 June 1993, Section 4.a.)

If a packaged treatment plant is recommended for Force Provider, the dimensions of each module should not exceed 8 x 8 x 20 feet. (The plant may be composed of several modules.) Each module should be ground transportable by vehicles organic to US Army units and air transportable in C-130 and larger aircraft.

The Force Provider Wastewater Treatment System will require an increase in manpower, but the required skills may be incorporated into an existing MOS. The system will be supported by the standard Army logistics system and maintained in accordance with the Army's standard four-level maintenance system to the maximum extent possible. Individual and unit training will be required for operator and maintenance personnel. Only standard tools will be used -- no special tools will be required to support the system. (Reference ORD for the Force Provider approved 23 June 1993, Section 4.b.)

1.5 OPERATIONAL CONCEPT

Force Provider is a system that will provide quality of life/R&R support for a force of 3,300 personnel. It consists of six 550-soldier modules, with each module capable of independent operations. The Force Provider will be assigned to a Theater Army Area Command (TAACOM) or Corps Support Command (COSCOM), with further attachment to an Area Support Group (ASG), Corps Support Group (CSG), Supply and Services Battalion, or other appropriate headquarters. A Force Provider Type B unit, augmented with military or civilian personnel, will be the primary operator of the system.

Elements of the 550-soldier module of the Force Provider could be employed as far forward as the division support area (DSA), depending on mission, enemy, troops, terrain, and time (METT-T). The full 3,300-soldier Force Provider -- all six modules -- will be employed as far forward as the corps area.

The Force Provider will be supported by the standard Army logistics system (supply and maintenance) to the maximum extent possible. Exceptions to this requirement will be addressed on a case-by-case basis. It is desirable that the Force Provider and all of its subsystems, including the Wastewater Treatment Subsystem, be repairable at organizational (ORG), direct support (DS), and general support (GS) levels of maintenance. The system may require new military occupational specialties (MOS) or additional skill identifiers (ASI); for example, wastewater treatment specialist. (Reference ORD for the Force Provider approved 23 June 1993, Section 1.b.)

SECTION 2

ALTERNATIVES

2.1 PERFORMANCE OBJECTIVES

The Operational Requirements Document (ORD) for the Force Provider System (FP) states, "Some requirements of the FP, such as waste disposal and wastewater reutilization/disposal may not be available initially with current technology. A concurrent pre-planned product improvement (P3I) program will be initiated to allow for modernized equipment and upgrades to the FP as the technology becomes available." The ORD therefore does not specify all of the operational requirements necessary for procuring a wastewater treatment system. There are a number of general FP system requirements in the ORD, however, which do bear directly on performance objectives for P3I wastewater treatment system. The following performance objectives stem from the ORD:

2.1.1 Wastewater Treatment Capacity

Each FP system consists of six 550 soldier modules. The supported force is therefore 3300 soldiers per FP system. The wastewater system must be able to support each module separately. In addition to latrine wastewater, wastewater will be generated by the requirements that each FP soldier be provided one shower per day, 15 pounds of laundry service for each three day period, and three prepared meals per day. The 24 hour wastewater production rate range is between 25,000 and 40,000 gallons per day per 550 soldier module. Paragraph 3.3.2.1.2 provides the rationale for choosing 26,400 gallons per day, which is based on the FP estimate of 48 gallons of wastewater per person per day.

2.1.2 Effluent Quality

The ORD states that: "Wastewater that cannot be treated will be disposed of through an environmentally safe method." It further states with regard to latrines that the latrine capability "must be equipped with or supported by a proper, environmentally sound, waste storage, disposal, filtration, and/or treatment method." As previously stated in paragraph 1.4, for the purposes of this analysis it is assumed that the effluent from the system must meet the National Pollutant Discharge Elimination Systems (NPDES) standards for secondary wastewater treatment; i.e., 5-day BOD and suspended solids must not exceed 30 mg per liter, removal efficiency must be greater than 85%, fecal coliform average must not exceed 200 per 100 ml for a 30-day period or 400 per 100 mg for a 7-day period, and the pH must between 6.0 and 9.0. It was also noted that this level of quality might not meet individual state standards. Therefore, in U.S. disaster relief operations or in U.S. training situations, either higher effluent standards or waivers would be required.

2.1.3 Weight

No specific weight requirement was identified in the ORD. Discussions with the project manager indicated an ISO container gross weight limitation of 13,000 pounds or 10,000 for TRICON will be necessary. See the following discussion of transportability.

2.1.4 Size

While no specific size requirement was identified, the ORD does require that all equipment fit in containers having external dimensions no greater than 8 feet wide, 8 feet high and 20 feet long. Furthermore, the containers must be Organization for International Standardization (ISO)-compatible and meet all ISO structural and handling requirements for international shipping, including stacking requirements. See the following discussion of transportability.

2.1.5 Power Consumption

No specific power consumption or power compatibility requirements were identified. The ORD does state that FP must "be resource efficient in terms of manpower, energy, fuel and water;...; and multifuel capable." Multifuel capable was explained in the Rationale Annex to mean use of the predominant battlefield fuels, JP-8 and DF2.

2.1.6 Operational Environment

The wastewater system must be capable of operations in temperature, solar radiation, and humidity conditions of hot and basic climate design types of Army Regulation 70-38. If the FPWWTX is developed, it will be required to meet the full temperature/climatic requirements of the ORD.

2.1.7 Maintainability and Logistical Supportability

The FP will be supported by the standard Army logistics system, both supply and maintenance, to the maximum extent possible. Exceptions for P3I subsystems such as the Wastewater Treatment System will be addressed on a case-by-case basis. For the basic FP, additional skills to operate or maintain the subsystem should not be required beyond those already taught to soldiers for their respective areas of responsibility. It is recognized, however, that the wastewater treatment system may require a new military occupational specialty (MOS)(e.g., wastewater treatment specialist) or unique Additional Skill Identifiers (ASI) for operators and maintainers. It is desirable that the wastewater treatment system be repairable at organizational, direct, and general support levels of maintenance. New system-specific test, measurement, and diagnostic equipment (TMDE) is not desired for P3I systems to include the wastewater treatment system. Exceptions will be made on a case by case basis.

2.1.8 Transportability

The wastewater treatment system in its shipping configuration will be capable of transport by highway, air, rail, and marine modes:

- Air transport will include C-130, C-141, C-5 and C-17 military aircraft.
- Marine transport will include the Lighter, Air Cushioned Vehicle-30 (LACV-30) and larger vessels.
- Rail transport is required.
- Highway transport and limited cross country transport is required by five ton truck and tractor, semi-trailer, Palletized Load System, self-loading trailers, or mobilizer systems.

The Rationale Annex of the ORD further states that: "Strategic and tactical mobility are critical design factors. The FP will be required to deploy to locations and situations across the TO. It must be capable of meeting the same transportability requirements of supported units. Flexibility in deployment ensures its capability to support conventional and highly mobile forces conducting operations."

2.1.8 NBC Operations

All P3I equipment for FP must meet the contamination survivability and decontamination standards required in AR 70-71, TRADOC Regulation 71-14, and Department of the Army approved nuclear, biological and chemical (NBC) contamination survivability criteria for Army materiel. The Rationale Annex of the ORD states that: "All P3I components should meet the contamination survivability criteria as those items are still to be developed or may be currently under development and required to meet these standards."

2.1.9 Manpower

The FP system to support 3300 personnel will be operated primarily by a cadre unit, augmented with military/ civilian personnel. As discussed in paragraph 2.1.7 previously, the wastewater treatment system may require either creation of a new MOS or ASI for operators and maintainers. The systems approach to training will be used to determine the actual training program for FP. It is desirable to minimize Army training cost, time, and associated resources. Any civilian augmentation will require personnel with commensurate skills required for the MOSs identified to operate and maintain the FP.

2.2 DESCRIPTION OF ALTERNATIVES

2.2.1 Introduction

According to the Statement of Work, the preferred solution for Force Provider wastewater disposal is the same as for all other Force Provider utilities; use available local utilities. In the case of wastewater, the collection lines would be run to and connected directly with the host nation or local sewer system. This solution is fastest and least expensive, but it is not always available. Force Provider may be used at remote sites and in less developed countries where such local support does not exist. In using Force Provider for the mission of disaster assistance, there is great likelihood that the local wastewater treatment and sewer systems may be inoperative or overloaded.

In the event direct discharge into an existing sewer system is not possible, there are fundamentally three ways of managing the wastewater generated by the Force Provider System. The untreated wastewater can be collected, hauled away, and disposed of elsewhere; the untreated wastewater can be treated by a plant or by an oxidation pond to reduce its pollution potential sufficiently to make its discharge into the ground or receiving waters environmentally acceptable; or the Field Sanitation Approach can be taken with the untreated wastewater by using burn out latrines, soakage pits or otherwise burying or disposing the wastewater near the FP. Each of these alternatives will be discussed in this Section, then analyzed in Section 3 and summarized in Section 4. The treatment alternative will be broken into two approaches -- Packaged Wastewater Treatment Systems and Oxidation Ponds/Sewage Lagoons. Each of the approaches will be reviewed in general, then specifically discussed in terms of the performance objectives listed previously.

2.2.2 Collect and Haul Away

2.2.2.1 Discussion

If it is not possible to discharge wastewater directly into an existing sewage collection and treatment system, hauling it away from Force Provider is then probably the easiest way to treat the wastewater. Treatment responsibility is transferred elsewhere. The Army's only responsibility is to ensure the treatment is environmentally acceptable.

Collecting FP gray and black wastewater and hauling it away was the initial recommendation made by the Force Provider Wastewater Collection and Treatment System Working Group which met on 7 April 1993. A number of collection alternatives were examined. The recommended graywater system for each 550 soldier module consisted of two 20,000 gallon POL pillow tanks located 1000 feet outside the perimeter of the camp. Wastewater collection vehicles would collect the graywater from the storage bags for disposal. If collection vehicles were not available, an additional 1000 feet of hose line would transport the graywater to a field expedient disposal site. The blackwater collection system for each 550 soldier module consisted of two trailer mounted 600 gallon POL pods on trailers located adjacent to each latrine. Army wastewater collection trucks would collect the wastewater and haul it to an acceptable disposal site.

Hauling away blackwater may be a viable option provided that a suitable treatment facility is available within a reasonable haul distance. To some extent the ease of transferring the problem to a contractor is offset by the potential for inappropriate disposal of the black wastewater.

Hauling away graywater is possible, but the quantities of gray water will be about 25,000 gallons per day for each 550 soldier module. The logistics involved in moving so much wastewater by 1000 gallon, or even 5000 gallon trucks, are substantial. Again, a suitable site must be available for disposal -- the use of seepage pits or open dumping of this quantity of water is not environmentally satisfactory.

2.2.2.2 Ability To Meet Performance Objectives

- Wastewater Treatment Capacity. Collect and Haul can meet the capacity requirements. As previously discussed, however, it will take a substantial effort if all the wastewater must be transported. The contractor who collected the wastewater during the operational test at Fort Bragg, for example, used two 8,400 gallon tanker trucks and one 4,000 gallon vacuum truck to remove some 20,000 gallons per day of gray and black water.

- Effluent Quality. This is not an issue for Collect and Haul since there is no treatment being directly applied. There must be consideration, however, of the disposal means being used at the final discharge site, since the Army could be considered responsible for any environmental or health problem.

- Weight. Discussed with transportability.

- Size. This is not an issue for the collection tanks or bladders must be transported. These can fit into ISO containers. The trucks, of course must be transported separately.

- Power Consumption. Fuel is required for the sewage collection trucks.

- Operational Environment. This is not an issue for Collect and Haul.

- Maintainability and Logistical Supportability. There are significant maintenance requirements for vehicles and the other special equipment needed for wastewater collection and disposal.

- Transportability. A substantial number of trucks and trailers would be needed as part of the Force Provider package. See Section 3.3.2.1.2 for detailed assumptions and calculations.

- NBC Operations. This is not a major problem for the collection tanks and/ bladders. It becomes a problem, however, for the trucks and equipment used to collect the wastewater.

- Manpower. Substantial numbers of truck drivers, equipment operators and mechanics will be needed.

2.2. Packaged Wastewater Treatment System

2.2.3.1 Discussion

The manufacture of small wastewater treatment plants has been done commercially for many years. There are a great number of such systems on the market. Mobility Technology Center-Belvoir has conducted a recent market survey in which 89 commercial wastewater treatment sources were identified through a Commerce Bulletin Daily announcement, professional conferences and unsolicited contacts. Twenty-seven packaged wastewater treatment system suppliers responded to a comprehensive questionnaire on their systems' operational performance, product assurance, production, cost and schedule characteristics. Most of the respondents produced blackwater, graywater and combined systems.

The methods for wastewater treatment in the packaged systems were primarily biological, but there were a number of systems which used other technologies. Membrane/bioreactor, physical separation and chemical technologies were offered.

Determining which technology and subset of technology was best was not part of the market survey. Generally each of the technologies will yield the desire treatment level when the systems are operating correctly. Biological systems are subject to shock loading and may lose their treatment efficiency. Membranes are subject to clogging and require replacement periodically. All require power and are dependent upon operators with a proper level of training.

Redeploying packaged plants involves a substantial clean up procedure to meet Department of Agriculture standards for return to the United States from OCONUS deployments.

2.2.3.2 Ability To Meet Performance Objectives

- Wastewater Treatment Capacity. Packaged plants can be obtained which meet the required treatment capacity. Many are in the 20,000 to 50,000 GPD range. The size of the plant may vary depending on the method of treatment.

- Effluent Quality. Packaged plants can meet or exceed the quality requirements.

- Weight. Numerous packaged plants can meet the individual ISO container weight limitation.

- Size. Numerous packaged plants can meet the ISO container size limitation. The number of containers needed varies depending upon the technologies employed. Most of the packaged plants could be housed in from one to three containers. The ORD does not currently limit the number of containers. This factor may become more important when deployability cubage and/or ISO container limitations are determined.

- Power Consumption. Packaged plants all have power requirements. The Mobility Technology Center-Belvoir market survey determined the power requirement ranged from 1.6 Kw to 51 Kw with an average of 15 Kw. Power is essential for continuous operations.

- Operational Environment. Packaged plants can operate within the ORD specified temperature range. The majority of biological responses to the Mobility Technology Center-Belvoir market survey stated they would have problems with extremely high temperatures (above 120° F), or with cleaning chemicals, chlorine, and extreme pH levels. They are also sensitive to extreme high and low flow and loading rates. Other treatment processes are not affected by these parameters.

- Maintainability and Logistical Supportability. If the packaged plant is type classified it will be supported by the standard Army logistics system. If type classified, contingency, or simply purchased and put into operational project stocks, it will require a repair parts overpack and/or contractor support maintenance. The packaged plants require a trained operator to be present from two to eight hours per day. One week's training would be necessary. A back up problem identification/ resolution procedure would be recommended due to the importance of maintaining continuous operation. The low number of systems to be bought make assignment of an Additional Skill Identifier (ASI) preferable to creation of a new Military Occupational Specialty (MOS).

- Transportability. Packaged plants can achieve the ISO container transportability requirement. No packaged plant has been identified that is already fielded in ISO container; therefore, some modest development work would be needed to configure packaged plants to ISO container size.

- NBC Operations. Packaged plants should be able to meet contamination survivability and decontamination standards when packed in ISO containers. Difficulty in meeting these standards will be encountered after the packaged plant is opened and put into operation.

- Manpower. An operator will be required for the packaged plant. On site operation and maintenance oversight will be required from two to eight hours per day depending on the packaged plant selected. A one week training program should suffice for the operator. Assignment of an ASI should be considered instead of creation of an MOS.

2.2.4 Oxidation Ponds/ Sewage Lagoons

2.2.4.1 Discussion

Oxidation ponds and sewage lagoons are used interchangeably in most references on the subject. The current edition of the Sewerage Field Manual, FM 5-163, recognizes that theater of operation situations such as those anticipated for Force Provider require that engineer works be constructed with the least possible utilization of time, manpower, equipment and material. It recommends sewage lagoons as the best general solution to the problem of wastewater treatment for these operational situations.

> "The sewage lagoon, applicable in all but extreme arctic regions, provides an ideal solution to the sewage treatment problem as it gives excellent primary and secondary sewage treatment with an absolute minimum of construction effort.
>
> (1) Primary treatment is accomplished by settling and anaerobic digestion. Secondary treatment is accomplished by aerobic digestion.
>
> (2) Sludge accumulates at a very slow rate allowing many years of efficient service from the lagoon without an appreciable reduction in capacity. Sewage lagoon effluent, as is the case with the effluent from conventional sewage treatment plants, is not necessarily free of pathogenic organisms and may require additional treatment." (pages 2-14 and 2-15, FM 5-163)

The sewage lagoon would be constructed near the Force Provider module by an Engineer Combat Heavy Company or by a contractor. Techniques for constructing such a pond are well known and are well within the capability of Army engineer units. The Army Facilities Components System, AFCS, has standard drawings and bills of materials for various sized sewage lagoons in Technical Manuals 5-302 and 5-303 respectively. The requirements for such facilities have been anticipated for theater construction and the engineer units to perform this work are already in the existing Army force structure.

2.2.4.2 Ability To Meet Performance Objectives

- Wastewater Treatment Capacity. Oxidation Ponds/Sewage Lagoons can be built to what ever size necessary to accommodate the Force Provider sewage load.

- Effluent Quality. Oxidation Ponds/Sewage Lagoons can meet the ORD quality requirements. The size of the pond can determine the retention time for sewage and therefore the level of treatment. Typical BOD reductions vary from 75 to 80 percent.

- Weight. Most of the materials for Oxidation Ponds/ Sewage Lagoons can be obtained locally (gravel and fence posts). Only the chlorination equipment would require shipment as part of Force Provider. It could be accommodated in less than one container.

- Size. The material for the Oxidation Pond/Sewage Lagoon can be packed into ISO containers. Much of it does not have to be Force Provider specific since it already provided for as a standard Army facilities component.

- Power Consumption. There are no power requirements for Oxidation Ponds/ Sewage Lagoons.

- Operational Environment. Oxidation Ponds/ Sewage Lagoons depend upon biological processes. They will operate in the temperature ranges listed in the ORD. They are less susceptible to damage from high or low loading or from extreme high temperatures (above 120° F), chlorine, cleaning chemicals, or pH variations.

- Maintainability and Logistical Supportability. The Class IV materials for Oxidation Ponds/ Sewage Lagoons are already in the Army supply system. Once constructed by Engineer units or contractors, there is little maintenance or attention required. No additional training for engineer units is necessary.

- Transportability. The components for Oxidation Ponds/ Sewage Lagoons are easily transportable. The Engineer units to construct the facility are in the force structure and already designated to perform this task.

- NBC Operations. Oxidation Ponds/ Sewage Lagoons are not greatly susceptible to contamination. Only the destruction of all biological life in the pond/lagoon would detrimentally affect their operation. Consequently this is not a significant issue.

- Manpower. No specific MOS or ASI is required. The Oxidation Pond/ Sewage Lagoon must be periodically inspected to insure it retains the wastewater and that any effluent is meeting the discharge standards.

2.2.5 Field Sanitation Approach

2.2.5.1 Discussion

The Field Sanitation Approach becomes the default method of handling wastewater in the event that no other system is provided. Standard field sanitation techniques are described in FM 21-10 and FM 21-10-1. They include the use of either pit latrines or burn-out latrines for the human wastes and a soakage pit for the kitchen. The volume of wastewater from shower and laundry facilities would be allowed to flow downhill and to either infiltrate the soil or run off. The Field Sanitation Approach is intended for small, company-sized units which move frequently, not for battalion-sized units like Force Provider, which may remain in place for extended periods. With no treatment of the effluent other than adding lime and covering the pits, the Field Sanitation Approach is for expediency only and does not comply with the environmental standards required of Force Provider.

2.2.5.2 Ability To Meet Performance Objectives

- Wastewater Treatment Capacity. The Field Sanitation Approach is unsatisfactory for handling the volume of Force Provider wastewater. Much of the wastewater would need to be dumped directly on the ground.

- Effluent Quality. The Field Sanitation Procedure provides no treatment and cannot achieve the required effluent quality.

- Weight. There is no additional weight for the Field Sanitation Procedure. TOE tools are sufficient.

- Size. Not applicable to the Field Sanitation Approach.

- Power Consumption. There are no power requirements for the Field Sanitation Approach other than fuel for burn-out latrines.

- Operational Environment. The Field Sanitation Approach would work in the required Force Provider environment.

- Maintainability and Logistical Supportability. There are no additional requirements for the Field Sanitation Approach. The basics of field sanitation are currently taught to soldiers in basic and advance skill training.

- Transportability. Not an issue for the Field Sanitation Approach.

- NBC Operations. The Field Sanitation Approach is not affected by NBC operations.

- Manpower. No additional manpower or training is required to use the Field Sanitation Approach. Work would be done by individual soldiers, details, or potentially contracts.

SECTION 3

ANALYSIS OF ALTERNATIVES

3.1 MODELS

3.1.1 General

No combat or battlefield simulation models were used in this Best Technical Approach (BTA) Analysis. However, as originally outlined in the Management Approach/Study Plan dated 26 April 1994 and 31 May 1994 Interim Report, a decision analysis support software package entitled Expert Choice ™, Version 8.0 was employed in the evaluation of each of the candidate approach characteristics with regard to cost, performance, and schedule parameters.

The treatment of wastewater is identified as a pre-planned product improvement (P^3I) to the Force Provider system. Since precise wastewater treatment requirements are not described in suitable detail in the Force Provider Operational Requirements Document (ORD), the required capabilities indicated in the Mission Needs Statement (MNS) for the Mobile Wastewater Treatment Plant were used as a starting point to derive typical features and characteristics. For easy reference, these documents are located at Appendices A and B, respectively. Relative performance of each approach against these characteristics forms the basis for the Best Technical Approach (BTA).

3.1.2 Analytical Hierarchy Process (AHP) and Expert Choice ™

The methodology used in the evaluation of various technical approaches in this study effort was based on the Analytical Hierarchy Process (AHP). The AHP is a decision theory that was developed at the Wharton School of Business by Dr. Thomas L. Saaty as a means to define, organize, and resolve complex questions involving multiple criteria of varying significance or importance. It is, in principle, a mathematical model which relies on the mechanics of pairwise comparisons, direct data input, and matrix algebra. The process permits a logical and systematic evaluation of each proposed approach with respect to each other over the full range of criteria. In addition, the process facilitates in-depth sensitivity analyses of any of the evaluation criteria and their impacts on the final selection.

Commercially available computerized AHP decision support software designed by Dr. Ernest H. Forman, specifically *Expert Choice*™, was used as a primary tool in evaluating the approaches in the BTA analysis.

3.2 OPERATIONAL REQUIREMENT ANALYSIS

3.2.1 General

A logic hierarchy or decision tree description of the Capabilities Required serves as the core of the evaluation process. The hierarchy for the Force Provider Wastewater Management System (FPWWMX) was derived indirectly from the paragraphs of the Mission Needs Statement as supplemented by knowledge or experience of the analysts in defense acquisition and wastewater management. Major decision criteria include the traditional program management factors of Cost, Performance, and Schedule are shown in Figure 3-1.

Cost	Performance	Schedule
Decision Cost Cost Risk	Deployability Operations Supportability Performance Risk	Initial Oper Capability Schedule Risk

Figure 3-1 Major Evaluation Criteria

Within these general criteria, improved resolution is obtained using subordinate criteria consisting of decision costs, deployability considerations, operational attributes, supportability traits, duration until Initial Operational Capability (IOC), and risk elements. These subcriteria parallel capabilities or constraints reflected in the MNS. Further breakdown of subcriteria is also incorporated in the hierarchy to insure that specific operational and support issues are adequately addressed for each approach. The development of decision costs to the appropriation and cost element level are presented in detail in Section 3.3.

Since the relative importance of each criteria with respect to each other is not necessarily equal, a series of pairwise comparisons were performed to assess the relative significance of one criteria versus another. Individual comparisons are synthesized in the decision software into an overall ratio scale representation of significance/importance of those factors. Results of the synthesis are expressed as criteria weights. Any inconsistencies in the pairwise comparison process reflected as an "inconsistency (IC) index" were resolved to insure that the IC was below the recommended level of 0.1.

The initial strawman hierarchy was developed internally by a team of BRTRC analysts and presented at the 1 June 1994 In-Process Review for review and comment. This strawman was adjusted as necessary to reflect input from the IPR attendees. The final hierarchy structure was coordinated with the project sponsor, the U.S. Army Quartermaster Center and School (USAQMCS), the Natick RDE Center, and other interested agency representatives. Appendix C presents a detailed summary of the final individual pairwise comparisons. The resultant hierarchy including criteria weightings is depicted in Figure 3-2.

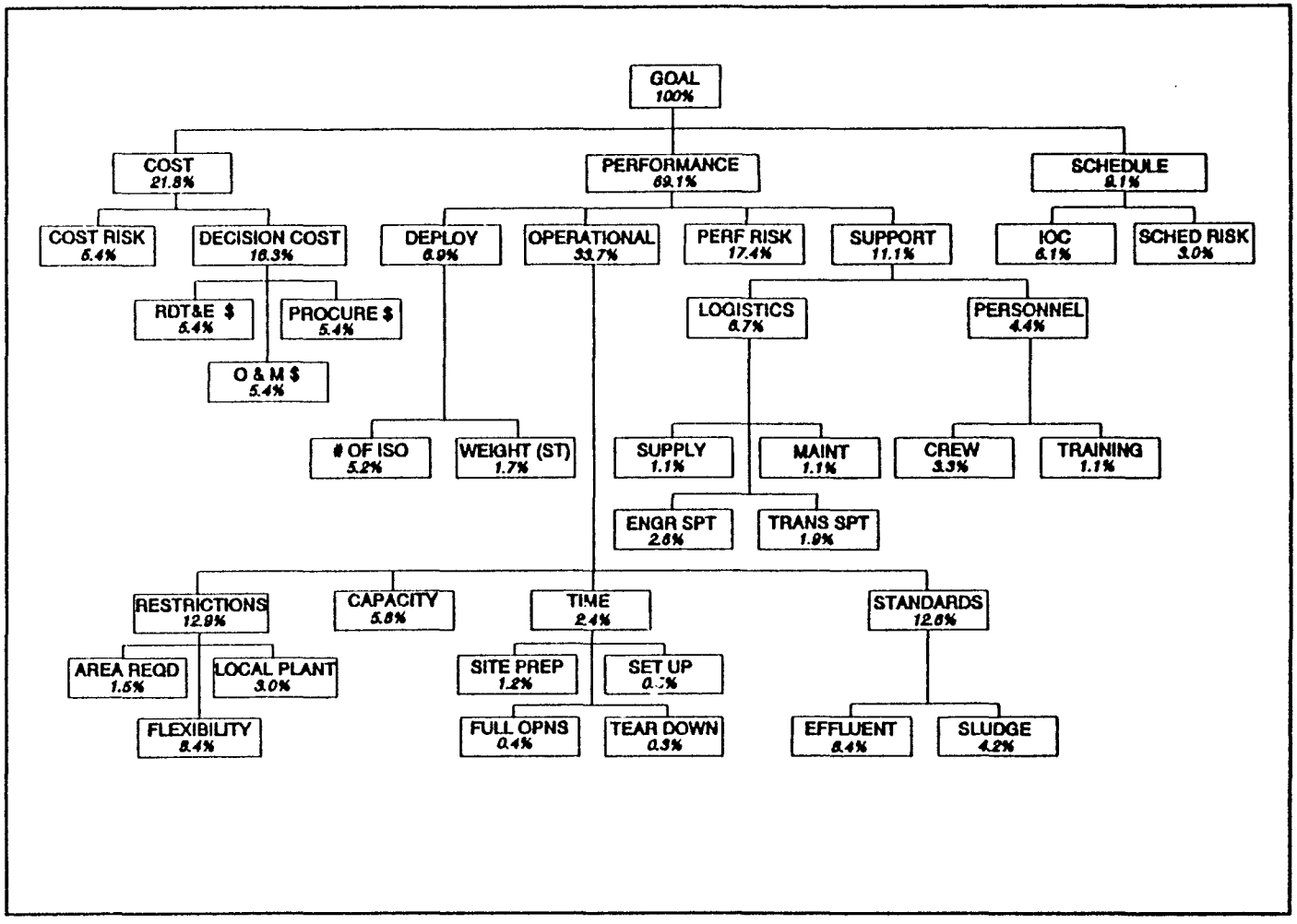

Figure 3-2 Force Provider Wastewater Management Approach Evaluation Hierarchy

Input data for this evaluation was derived from market data, field manuals, technical publications, relevant textbooks, and state and federal water quality and wastewater management regulations. Detailed cost breakdowns are found in Section 3.3 and in the appendices. Engineering judgment was used to supplement data where necessary to fill gaps. Figure 3-3 presents a summary of characteristics for each approach considered in this portion of the analysis.

	COLLECT & HAUL	PACKAGED PLANT	FIELD SANITATION	OXIDATION POND
		COST		
RDT&E	$ 3.29 M	$ 3.53 M	$ 0.0 M	$ 0.42 M
Procurement	$ 8.48 M	$ 4.78 M	$ 0.0 M	$ 0.24 M
O & M	$ 35.84 M	$ 3.84 M	$ 1.32 M	$ 4.31 M
Cost Risk	Low	Moderate	Low	Low
		SCHEDULE		
IOC	4 years	6 years	< 1 year	2 years
Schedule Risk	Low	Moderate	Low	Low
		PERFORMANCE (One 550 soldier FP Module)		
#ISO Container	11-13 (equiv)	3-8	0-1	1-2
Est. Weight	57.5 tons	10.0 tons	0.25 tons	0.50 tons
Area Required	0.25 acres	0.25 acres	0.40 acres	5.5 acres
Local Plant Dependency	Strong	None	None	None
Flexibility	Low	High	Very Low	Moderate
Capacity	28-40K gpd	25-30K gpd	2750 gpd	38-42K gpd
Site Prep	16 hours	24 hours	40 hours	76 hours
Set-Up	16 hours	4-24 hours	16 hours	8 hours
Full Operation	8 hours	24-72 hours	8 hours	8 hours
Tear Down	48 hours	8-60 hours	24 hours	4 hours

Figure 3-3 Comparison of Approach Characteristics

	COLLECT & HAUL	PACKAGED PLANT	FIELD SANITATION	OXIDATION POND
PERFORMANCE (continued)				
Effluent Quality	> 95% BOD reduction	80-85% BOD reduction	< 10% BOD reduction	75-85% BOD reduction
Sludge Quantity	Low	Low	Low to Moderate	Low to Moderate
Supply Support	Medium	Low	Very Low	Very Low
Maintenance Requirements	High	Low	Moderate	Very Low
Engineer Support	Low	Very Low	Moderate	High
Transportation Support	High	Moderate	None	None
Crew Size	5	1	4-6	< 1
Training Required	Low	Moderate	Very Low	Very Low

Figure 3-3 (Continued) Comparison of Approach Characteristics

Prior market investigation data regarding the availability of Packaged Wastewater Treatment Plants revealed a wide range of system types, configurations, and treatment processes. For the purposes of this approach analysis, typical values were selected to represent a composite of systems rather than a particular plant. It is recognized that packaged plants can be produced with higher capacities approaching 50,000 gallons per day. Further, this capacity can be expanded by using individual plants in tandem. However, many (if not most) of the manufacturers responding to the market survey reported plants in the 25,000 to 30,000 gpd range. Other options are also expandable; but have been sized and costed to meet the estimated daily flow rates of Force Provider.

Similarly, there was a wide variance in packaged plant parameters of set-up, tear-down, weight, number of ISO containers required, and so on. Again, representative values were selected for these parameters.

The comparison of each of the approaches against all of the criteria presented in Figure 3-2 forms the basis of the analysis.

3.2.2 Analysis of Alternatives versus Evaluation Hierarchy

Figure 3-4 presents the results of the overall analysis. Comparisons are provided for each of the approaches in ratio scale where the combined total of each column for all approaches totals one (subject to rounding error). Rankings of each approach within the criteria category are shown in parentheses.

	COST (Rank)	PERFORMANCE (Rank)	SCHEDULE (Rank)	OVERALL (Rank)
OXIDATION POND	.217 (2)	.358 (1)	.269 (2)	.319 (1)
FIELD SANITATION	.664 (1)	.140 (4)	.518 (1)	.289 (2)
PACKAGED PLANT	.074 (3)	.310 (2)	.089 (4)	.238 (3)
COLLECT & HAUL	.045 (4)	.193 (3)	.124 (3)	.154 (4)

Figure 3-4 Cost-Performance-Schedule Rankings of Approaches

The results in the figure above are presented in order according to their overall ratio scale values. With respect to the combination of Cost, Performance, and Schedule criteria; the Oxidation Pond approach ranks as the number 1 choice. The Oxidation Pond option reflects the highest overall ranking with a composite value of .319 or nearly 10 percent better overall than the Field Sanitation (#2) approach. Use of the Oxidation Pond is also 34 percent better than the Packaged Plant (#3) and more than 100 percent better than the Collect and Haul approach (#4). A more detailed examination of each of the major criteria provides valuable insight into the advantages and disadvantages of each approach.

From a cost only perspective, Field Sanitation provides the cheapest solution. Its ratio scale value of .664 reflects a 3:1 preference over the #2 Oxidation Pond. Similarly, the Oxidation Pond is nearly a 3:1 cost favorite over the Packaged Plant. The most costly of the approaches is the Collect and Haul option. Specific details of Decision Cost Estimates (DCE) are presented in greater detail in Section 3.3 and 3.4.

However, when performance alone is considered, the Oxidation Pond approach demonstrates the best characteristics. The Packaged Plant option ranks second at just 15% lower than the Pond. The Collect and Haul technique and the use of Field Sanitation measures both fall substantially below either of the top two approaches with regard to performance. The performance of the Oxidation Pond is favored by a margin of 2:1 over Collect and Haul and almost 3:1 over Field Sanitation measures.

Schedule was the third major criteria considered. Within this element, Field Sanitation provides the solution which can be implemented most quickly since it involves no development or procurement actions. From a schedule viewpoint, Field Sanitation is preferred 2:1 over Oxidation Ponds. In turn, the Oxidation Pond is favored 2:1 over Collect and Haul. The Collect and Haul alternative is about 40% better than the Packaged Plant with respect to schedule criteria.

Figure 3-5 depicts these results in graphical form. When shown in this manner, it is quite simple to assess the strong and weak points of each of the approaches. The Oxidation Pond displays the highest combined value by virtue of its strong performance coupled with satisfactory cost and schedule attributes. The tradeoff of lower cost and better schedule factors for Field Sanitation manifests itself in the lowest performance of the approaches considered. Overall performance of the Packaged Plant approximates that of the Oxidation Pond; but with less desirable cost and schedule traits. The Collect and Haul approach fails to offer any substantive benefit in any of the major criteria and, thus, ranks well below the other options.

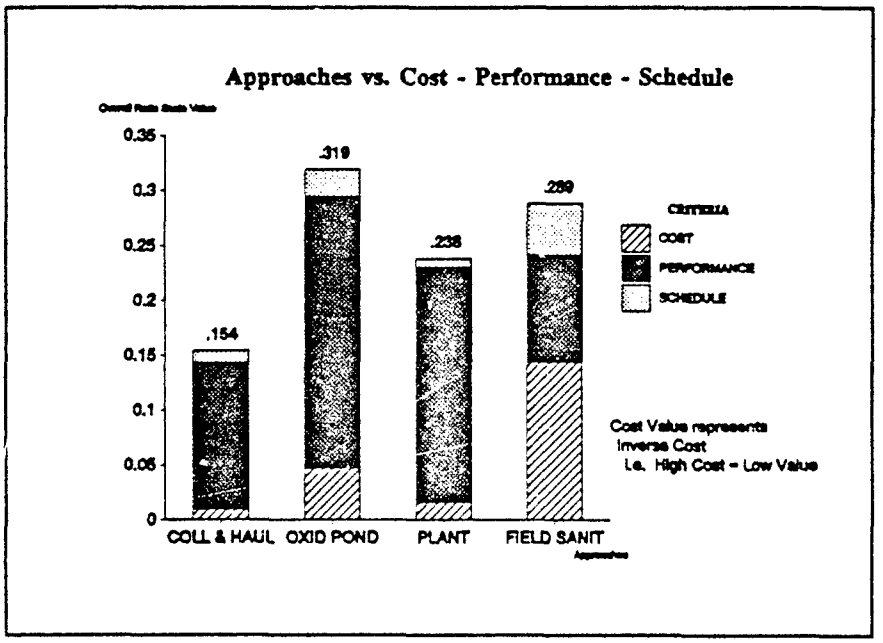

Figure 3-5 Graphic Portrayal of Cost-Performance-Schedule Evaluations

Performance is normally a primary issue in the ultimate selection of the system or approach best able to meet the stated requirement. For this reason, a more in-depth analysis of the subordinate performance criteria can provide additional information valuable to the selection process. The following sections discuss the various criteria in greater depth.

3.2.3 Major Performance Elements of the FPWWMX Hierarchy

In order to obtain a more accurate representation of performance regarding each of the approaches, it is necessary to look at individual elements within the hierarchy. Four major performance subcriteria at the third level of the hierarchy comprise nearly 70 percent of the overall evaluation. The major elements of performance as defined in the hierarchy are: deployability (6.9%), operational characteristics (33.7%), performance risk (17.4%), and supportability (11.1%). A closer examination of these criteria is necessary to afford a more comprehensive evaluation of each of the approaches.

3.2.3.1 System Performance. Figure 3-6 displays relative performance of each of the approaches based on the four factors noted above.

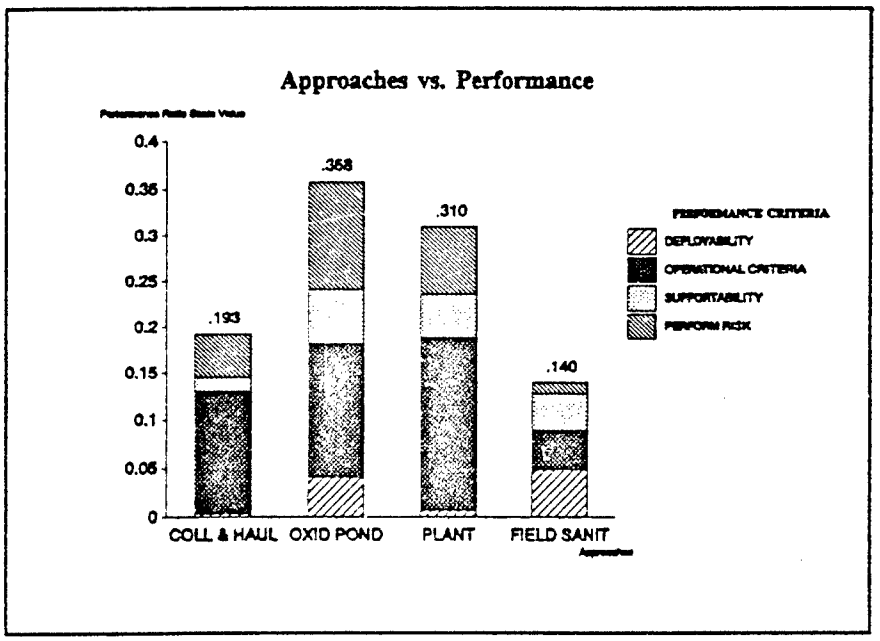

Figure 3-6 Graphic Portrayal of Performance Evaluations

From a strictly performance perspective, the Oxidation Pond reveals the highest overall performance. The Packaged Plant ranks second and slightly below the Pond. The remaining approaches fall significantly below either of the top two choices.

The performance of the Oxidation Pond fares well in nearly every category. It yields the best characteristics of any approach in performance risk and in supportability. The actual treatment process involved is well understood and with the exception of the effort required to construct the pond itself -- it requires little or no maintenance. The Pond competes favorable in both operational and deployment criteria.

The Packaged Plant's major advantage is in operational features. Operationally, it is the best approach. However, it is somewhat more limited than the Oxidation Pond in support and performance risk. The Plant is significantly more restrictive for deployment than either the Oxidation Pond or Field Sanitation.

The Collect and Haul approach compares favorably with the top ranked systems in an operational sense. However, it is the least deployable of the approaches considered and it is also the most difficult to support due to the number of trucks required.

The principal advantage of the Field Sanitation approach is in deployability. This approach requires little or no deployment effort since on site materials provide the bulk of the treatment required. Operationally, however, this approach cannot meet effluent standards and its use is restricted in many areas. Thus, the small operational contribution to the overall performance score. Use of Field Sanitation measures is considered to be a higher performance risk because the use of seepage pits is highly dependent on soil characteristics at the site. These methods were principally intended to dispose of 200 gpd or less over short durations. In Force Provider, higher flows and longer encampments are likely.

3.2.3.2 Operational Criteria. At the fourth level of the evaluation hierarchy, operational considerations are composed of four sub-criteria including restrictions in the use of the approach (12.9%), capacity (5.8%), time and effort required for various stages of operations (2.4%), and the ability to meet wastewater standards (12.6%). Figure 3-7 displays the relative rankings of the approaches considering these factors.

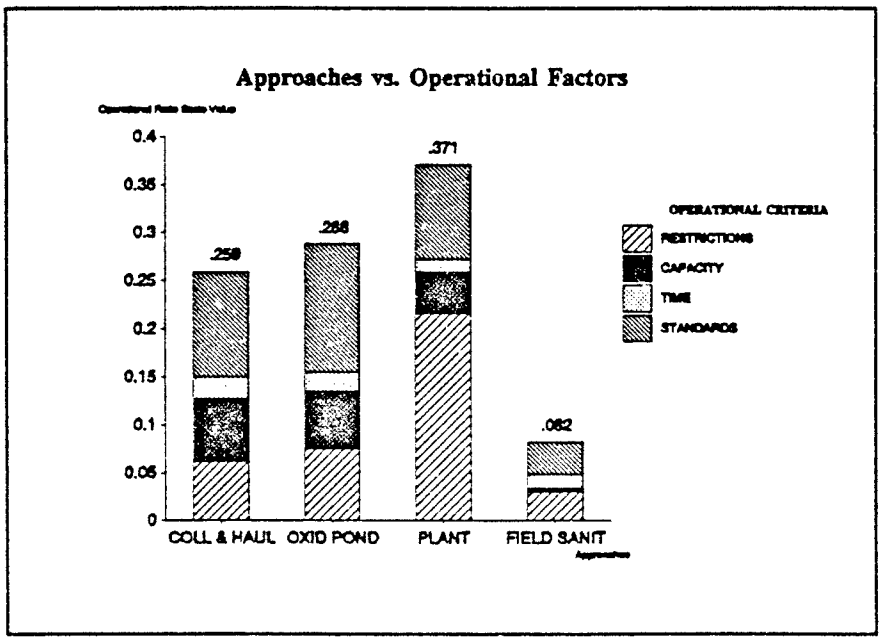

Figure 3-7 Graphic Portrayal of Operational Evaluations

From an operational viewpoint, the Packaged Plant ranks as the best approach. The Oxidation Pond ranks second operationally and is about 22 percent below the Plant. The Collect and Haul approach ranks third and is 30 percent below the Plant. The Field Sanitation option rates significantly below any of the other approaches.

The most notable aspect of the Packaged Plant is that it is the least restrictive of the approaches considered. It does not require a large area for set-up; nor does it rely on the availability of nearby treatment facilities or host nation support. The principal advantage of the Plant is in its employment flexibility regardless of site specific condition or wastewater regulatory guidelines. The Packaged Plant's rating in capacity, time, and standards is comparable to that of the Oxidation Pond and the Collect and Haul approach.

The Oxidation Pond and the Collect and Haul approach are nearly identical in many operational criteria. However, the Oxidation Pond offers slight advantage over Collect and Haul in the areas of restrictions and standards. Use of the Oxidation Pond is considered to be less operationally restrictive as long as sufficient area is available to construct the pond. Considering the fact that the basic Force Provider module requires an estimated 18-20 acres, the addition of 5 acres for construction of the Oxidation Pond may not create an insurmountable problem. The Collect and Haul approach, however, can only be used in permissive situations where local treatment facilities are located within a reasonable round trip haul distance. In addition, sludge which is produced at the host plant must be processed. No additional processing is required for the Pond.

The Field Sanitation approach is the least preferred option as reflected by its fourth place ranking in operational criteria. This approach cannot meet secondary wastewater treatment standards and is technically a field disposal method rather than a true treatment process. Use of Field Sanitation cannot compete with the other approaches with regard to capacity or standards and is the most restrictive of the approaches because of limitations on its use. The only operational feature where Field Sanitation provides comparable level of performance is in the time criteria.

3.2.4 Sensitivity Analysis

Appendix G consists of a series of charts and graphs which capture the sensitivity of adjustments in the weights of the criteria of the Force Provider Wastewater Management Evaluation hierarchy. All comparisons are presented in ratio scale.

A series of four different types of charts or diagrams are included in this analysis. Each type requires a brief explanation:

- Barcharts. The barchart presents criteria weights on the left and resultant ratio scale values for each of the alternatives on the right. The first barchart shown within a series reflects the results at the initial criteria weightings. Subsequent charts examine the impact of varying individual criteria weights.

- Performance Illustrations. These illustrations depict criteria along the horizontal axis. The length of the vertical bar above a criteria indicates its weight which can be read from the left hand scale. Ratio scale values for each approach can be determined for each criteria from the right hand scale. The intersection of the criteria line with each of the approaches reveals their relative rankings for that measure of effectiveness. Combined or overall values for those criteria are shown in the far right column.

- 2-dimensional plots. These plots are used to compare two criteria simultaneously. Axes are labeled in ratio scale. In general, the more preferable characteristics would result in a plot in the upper right quadrant. Less preferable alternatives appear in the lower left quadrant. Tradeoffs are identified in the remaining sections.

- Gradient diagrams. These diagrams show the rankings of the approaches in ratio scale as the weighting or priority of a given criteria is altered. The vertical line indicates the baseline weight from Figure 3-2. The impact of varying the weight of the criteria can be deduced from the relative positions of the approach lines at the adjusted weight.

3.2.5 Summary Results of the Analytical Hierarchy Analysis

The Oxidation Pond is ranked as the number one selection when Cost-Performance-Schedule criteria are considered. The increased cost of the Pond over Field Sanitation methods is more than offset by its excellent performance characteristics.

Field Sanitation affords the cheapest and quickest approach and is ranked second overall. However, this approach fails to provide the operational and performance required to meet the required secondary wastewater treatment standards necessary to support Force Provider. Use of Field Sanitation methods involving burnout latrines and seepage pits are no longer permitted in many areas. Further, those methods are generally only applicable at the company or battery level and are not designed to handle large volumes of wastewater for extended periods. Other approaches provide better performance and operational features.

The Packaged Plant rates third overall. While its performance features compare closely with the Oxidation Pond, the cost and schedule impacts associated with the Packaged Plant are its major disadvantages. It does, however, offer better operational characteristics by way of increased flexibility and reduced restrictions in the use of the system.

The Collect and Haul approach ranks fourth primarily due to its high cost, increased support requirements, and lower overall deployability. This approach is also limited by the restrictive nature of having local disposal plants within a reasonable distance. This reliance on host facilities places limits on where and when it can be used efficiently.

3.3 COSTS

3.3.1 General Methodology

The cost analysis for this Best Technical Approach was conducted in accordance with the guidance set forth in the DoD 5000 series Directives and Instructions, the Training and Doctrine Command (TRADOC) Pamphlet 11-8 (Draft), and other applicable references. In particular, the cost analysis utilized the concept of Decision Cost developed in that TRADOC publication. The general methodology consisted of the following steps:

(1) A determination was made of the decision costs associated with selection of each of the three approaches. Decision cost categories include both dollar costs and non-dollar costs.

(2) A comparison of the decision costs for each approach was performed.

(3) Trade-off, sensitivity, and uncertainty analyses were conducted.

(4) Integration of the cost analysis results with operational effectiveness analyses results was performed.

(5) The Decision Cost Estimates were submitted to the Belvoir Cost Analysis Office on May 25,1994, for validation. As of July 7, 1994, they had not yet been validated.

3.3.2 Dollar Decision Costs

3.3.2.1 Development of Dollar Decision Costs

3.3.2.1.1 General

(1) All costs were estimated in thousands of FY 1995 Constant Dollars and converted into Current Dollars using Inflation Guidance from Memo, Headquarters, Army Materiel Command (AMCRM-CE), dated 7 February 1994.

(2) All costs through 1994 were considered Sunk Costs and excluded from the Decision Cost Estimates.

(3) In accordance with Draft TRADOC Pamphlet 11-8, Para 3-3.c.1 (page 25), Military Personnel Costs (Cost Category 4.0) were excluded from Decision Costs, although they would be included in a Baseline Cost Estimate (BCE) or Total Life Cycle Cost Estimate (TLCCE).

(4) The basic cost estimates for all approaches assumed a modified NDI acquisition strategy leading to type classification. In the Trade-Off Analysis (Section 3.5), the following two alternative acquisition strategies were also evaluated:

- Modified NDI leading to operational stocks
- Service Contract

3.3.2.1.2 Collect and Haul Away Approach

This approach will collect and haul away the wastewater (both black water and gray water) from Force Provider. It assumes that the host nation or supported agency provides a treatment plant or other acceptable disposal site to which the wastewater can be hauled.

The Operational Requirements Document for the Force Provider plans Initial Procurement for FY 1995 and Initial Operational Capability (IOC) in FY 1996. The Wastewater Treatment System is identified as a Preplanned Product Improvement (P3I) but should follow the Force Provider with minimum delay. Consequently, this Decision Cost Estimate assumes a modified NDI Acquisition Strategy for the tank trucks required with a Milestone I/II in FY 1995, an abbreviated EMD leading to Milestone III and low rate production in FY 1997, Manufacture in FY 1998 through FY 2000, and Fielding in FY 1999 through FY 2001. This is a compressed schedule.

The number of trucks required was estimated as follows:

Force Provider estimates 48 gpd per person * 550 = 26,400 gpd.

Standard state planning factor (<600 population) = 70 gpd * 550 = 38,500 gpd.

Both 5000 gal and 1000 gal tankers were considered. The 1000 gal tankers were selected for costing purposed because of their greater maneuverability.

Assuming 1000 gal tankers, = 26.4 to 38.5 tankers per day.

Assuming 1.5 hour round trip (15 min to load, 15 min to discharge, and 1 hour round trip road time), this = 39.6 to 58.5 tanker-hours.

Assuming a 10-hour day, requirement is for 6 + 1 in reserve = 7 tankers for standard state planning factors or 4 +1 = 5 for Force Provider planning factor.

The basic estimate uses the Force Provider planning factor but investigates the impact of the standard planning factor as part of the sensitivity analysis.

Using the Force Provider planning factor, 5 * 36 = 180 trucks for all six Force Provider companies.

A detailed summary of the Decision Cost Estimate for the Collect and Haul Away Approach, showing the assumptions, all the Cost Elements, and the breakdown of costs over the years is shown in Appendix D.

3.3.2.1.3 Packaged Wastewater Treatment System

This approach provides a packaged wastewater treatment system to support each module of Force Provider. (The specific plant would be selected at a later stage of the acquisition process.)

As Section 3.3.2.1.1 indicated, the Operational Requirements Document for the Force Provider plans Initial Procurement for FY 1995 and Initial Operational Capability (IOC) in FY 1996. Although the Wastewater Treatment System is identified as a Preplanned Product Improvement (P3I), it should follow the Force Provider with minimum delay. Consequently, this Decision Cost Estimate assumes a modified NDI Acquisition Strategy with a Milestone I/II in FY 1996, an abbreviated EMD leading to Milestone III at the end of FY 1997, Manufacture in FY 1998 and 1999, and Fielding in FY 2000. This is a compressed schedule. The requirement is for one unit for each of the Force Provider modules for a total of 36 units. The system is anticipated to have a useful life of 20 years.

Appendix E contains a detailed summary of the Decision Cost Estimate for the Packaged Wastewater Treatment Plant, showing the assumptions, all the Cost Elements, and the breakdown of costs over the years.

3.3.2.1.4 Oxidation Pond or Sewage Lagoon

This approach involves the construction of an oxidation pond, stabilization pond, or sewage lagoon to support each module of Force Provider.

The technologies and methods for constructing oxidation ponds are well known and generic blueprints are included in TM 5-302 Army Facilities Component System. No complex Research and Development program is required. Consequently, this Decision Cost Estimate assumes a relatively simple program including the development of a package of detailed blueprints for an oxidation pond for a 550-man Force Provider module and for all six modules deployed together and a modified NDI Acquisition Strategy for chlorinators for treatment of the effluent from the oxidation pond if that is necessary. (Investigation indicates that there are no suitable chlorinators in the Army supply system.) The chlorinators would be acquired in FY 1996 to support the IOC of Force Provider. The O&M costs for the construction of the oxidation ponds, excluding troop labor costs, are estimated in Cost Element 5.12.

For further details, see the summary of the Decision Cost Estimate for the Oxidation Pond or Sewage Treatment Lagoon in Appendix F.

3.3.2.1.5 Field Sanitation Approach

If none of the three approaches discussed above is adopted, standard field sanitation techniques as described in FM 21-10 and FM 21-10-1 would

have to be used. This approach would require using either pit latrines or burn-out latrines for the human wastes and a soakage pit for the kitchen wastewater. In theory soakage pits should also be dug to dispose of the water from the showers and laundry facilities. However, this is not a practical solution for Force Provider, since a standard soakage pit can handle only about 200 gallons per day even in porous soil. Thus, to dispose of the gray water from one module would require from 73 to 122 standard 4 by 4 pits. Consequently the shower and laundry water would probably be allowed to run off into the nearest ravine. It should be noted that using these standard field sanitation methods does not satisfy the NPDES requirements and is not authorized in many areas. The field sanitation approaches are intended for small, company-sized units which move frequently, not for battalion-sized units like Force Provider, which may remain in place extended periods. Army doctrine for larger installations which remain in place for extended periods calls for Theater of Operations Construction with Oxidation Ponds or Sewage Lagoons.

Obviously there are no RDT&E or Procurement Costs for the Field Sanitation Approach. Under O&M Costs the work of digging the pit latrines and seepage pits and operating the burn-out latrines would be performed by troop labor -- work details from the Force Provider Company or the guest unit. Since military personnel costs are excluded from Decision Costs, this is essentially a no cost approach. The only cost would be that for a few gallons of diesel fuel and gasoline. Assuming 24 toilets per module, the POL costs would be only $20.40 per module per day. Since there are costs for only one Cost Element, a complete Decision Cost Estimate was not produced for this approach.

3.3.2.2 Comparison of Constant Dollar Decision Costs

Figure 3-8 presents a comparison of the Decision Costs of these approaches in thousands of FY 1995 constant dollars. It should be noted that O&M costs for all alternatives assume a 90-day deployment for each module each year for 20 years. In order to simplify this presentation, only the most significant Cost Elements are listed in this figure. Listings of all the Cost Elements for each Decision Cost Element, as well as breakouts over the years, are included in Appendices D through F. In developing the Decision Costs, the analyst carried calculations to eight significant figures for accuracy. In accordance with TRADOC guidance, however, the costs in this figure have been rounded to four significant figures. Because of this rounding, the numbers may not add to the totals shown.

3.3.2.3 Analysis of Constant Dollar Decision Costs

From Figure 3-8 it is clear that using Field Sanitation techniques is the cheapest approach. Since costs for troop labor are excluded, the only costs are the costs for POL, which amount to only $1.3 million over 20 years.

Constructing an oxidation pond or sewage lagoon has the lowest Decision Cost of the other three approaches -- just under $5 million. RDT&E costs are low,

	COLLECT AND HAUL AWAY	PACKAGED PLANT	FIELD SANITA-TION	OXIDATION POND
APPENDIX	D	E	N/A	F
1.0 RDT&E	3,287.0	3,532.0	0.0	419.2
1.01 Development Engineering	2,229.0	2,234.0	0.0	208.9
2.0 PRO-CUREMENT	8,482.0	4,780.0	0.0	237.6
2.021 Manufacturing	5,736.0	2,921.0	0.0	63.3
3.0 MIL CONSTRUCTION	0.0	0.0	0.0	0.0
4.0 MIL PERSONNEL	0.0	0.0	0.0	0.0
5.0 O&M (20 yrs @ 90 days/yr/module)	35,843.0	3,836.0	1,322.0	4,305.0
5.03 Depot Level Reparables	2,228.0	1,460.0	0.0	31.6
5.04 Consumables	24,060.0	1,460.0	0.0	31.6
5.05 POL	5,791.0	715.4	1,322.0	0.0
5.061 Overhaul	2,868.0	0.0	0.0	0.0
5.12 Other: O&M Costs for Constructing Ponds	0.0	0.0	0.0	4,142.0
TOTALS	47,610.0	12,150.0	1,322.0	4,962.0

Figure 3-8 Dollar Decision Costs for NDI with Type Classification

(In Thousands of FY 1995 CONSTANT Dollars)

since the program consists essentially of preparing a package of blueprints for a properly sized oxidation pond and testing of NDI chlorinators. Procurement costs are also low and cover the acquisition of a chlorinator for the effluent of the oxidation pond for each module. Similarly, O & M costs are also quite low -- oxidation ponds rely primarily on solar energy. The largest single cost element is 5.12, $4,141K, which includes the cost of the engineer effort (excluding troop labor costs) to construct the pond in the theater of operations.

The most expensive alternative is the collect and haul away approach, which costs about $42.7 million more than the oxidation ponds. Acquiring the 180 wastewater transport trucks required is quite expensive -- almost $6 million for manufacturing costs and over $8 million for total procurement costs. Operations and Maintenance costs, however, are even more expensive. High repair parts, POL, and depot overhaul costs make total O & M costs over $35 million.

The costs for the packaged wastewater treatment plant alternative are much lower than those for the wastewater transport trucks. To be sure, development costs are slightly higher, reflecting the cost of selecting among the alternative plants available. Procurement costs are less than $5 million, and O & M costs only $3.8 million. It is much cheaper to buy and operate packaged wastewater treatment plants than to buy and operate a fleet of trucks. Total decision costs for the packaged plant alternative, $12.1 million, is about $35.5 million less than that for the collect and haul away alternative.

3.3.2.4 Current Dollar Decision Costs

Figure 3-9 presents a comparison of the Decision Costs of the three alternatives in thousands of CURRENT dollars. Because of inflation, the figures are naturally all considerably higher than those in constant dollars. Since the production and fielding schedules for the alternatives are quite similar, however, changing to current dollars does not change the ordinal comparison among them, although the dollar differences naturally increase.

3.3.3 Non-Dollar Decision Costs

3.3.3.1 Comparison of Non-Decision Costs

Figure 3-10 presents a comparison of the Non-Dollar Decision Costs of the alternatives.

3.3.3.2 Analysis of Non-Decision Costs

As the first row of Figure 3-10 indicates, the estimated deployment weights of the different systems vary considerably. Aside from the Field Sanitation Approach, the Oxidation Pond is the lightest. The only piece of equipment required is the chlorinator, and

this weighs less than one half a ton. Packaged plants vary in weight, but a typical one weighs about ten short tons. The five trucks per module for the Collect and Haul Away Approach make this the heaviest alternative at 57.5 short tons.

	COLLECT AND HAUL AWAY	PACKAGED PLANT	FIELD SANITA-TION	OXIDATION POND
APPENDIX	D	E	N/A	F
1.0 RDT&E	3,481.0	3,749.0	0.0	429.7
1.01 Development Engineering	2,360.0	2,374.0	0.0	214.1
2.0 PRO-CUREMENT	9,883.0	5,514.0	0.0	255.3
2.021 Manufacturing	6,777.0	3,478.0	0.0	69.1
3.0 MIL CONSTRUCTION	0.0	0.0	0.0	0.0
4.0 MIL PERSONNEL	0.0	0.0	0.0	0.0
5.0 O&M	58,120.0	6,255.0	2,156.0	6,237.0
5.03 Depot Level Reparables	3,615.0	2,381.0	0.0	45.8
5.04 Consumables	39,040.0	2,381.0	0.0	45.8
5.05 POL	9,399.0	1,166.0	2,156.0	0.0
5.061 Overhaul	4,610.0	0.0	0.0	0.0
5.12 Other: O&M Costs for Constructing Ponds	0.0	0.0	0.0	6,000.0
TOTALS	71,480.0	15,520.0	2,156.0	6,922.0

Figure 3-9 Dollar Decision Costs for NDI with Type Classification

(In Thousands of CURRENT Dollars)

	COLLECT AND HAUL AWAY	PACKAGED PLANT	FIELD SANITATION	OXIDATION POND
Estimated Deployment Weight (ST) per Module	5 * 11.5 ST = 57.5 ST	10 ST	0.25 ST (Material for Grease Traps)	0.5 ST
Fuel Consumption per module (Gal per day)	5 * 137.5 mi * 0.19 gal/mi = 131 gal/day	24 hrs * 0.62 gal/hr = 15 gal/day	24 toilets * 1.25 gal = 30 gal/day	0
Engineer Effort Required	Low (Road Construction and Maintenance)	Very Low (Excavating for plant, sewerage lines)	Low (Seepage Pits constructed by troop details)	High (Construction of Pond)
Operating Personnel Required	5	1	Daily detail of 4-6.	1 (part time)
Limitations on Employment	Availability of Treatment Plant or Dump Site	None	Not authorized in many areas	Area for Pond (Approx 5.5 Acres) Real Estate and Permits
Maintenance Requirements	High	Low	Moderate (Clean traps)	Very Low
Reliability	Low	Moderate	High (In porous soils)	Very High
Relocation Requirements	High	High	Moderate (Close pits)	Low, but New Pond
Aesthetics	Low	High	Very Low	Moderate
Earliest Fielding Date	FY 1999	FY 2000	Now	FY 1996

Figure 3-10 Non-Dollar Decision Costs per Module

As might be expected, comparisons of fuel consumption parallel those for weight. The Oxidation Pond requires no POL, and the generator for the Packaged Plant (assumed 2 * 3 kw) requires only about 15 gallons of fuel per day. Similarly, the burn-out latrines require about 30 gallons per day. The five trucks of the Collect and Haul Away alternative, however, require about 131 gallons per day, assuming a 25-mile round trip haul.

The engineer effort required varies a great deal among the three alternative approaches. Construction of seepage pits is the responsibility of the individual units, not engineer units. The Packaged Wastewater Treatment Plant requires a relatively small amount of engineer effort. Most of the plants investigated require some emplacement, and some engineer work may be required for sewerage lines, but the total effort is very small. The Collect and Haul Away approach will probably require a small effort on road construction and a somewhat larger effort to maintain the roads used for transporting the wastewater. Constructing the Oxidation Pond will require considerably more engineer effort. The construction estimate prepared for the Decision Cost Estimate yielded a total of 190 dozer hours, 64.5 grader hours, and 46.2 sheepsfoot roller hours for a typical Oxidation Pond. To complete the earthwork in about 30 hours would require about 6 dozers, 2 graders, and 2 rollers. Equally important as the engineer effort required is the fact that the task would be added to the list of engineer tasks for the area during the operation. How soon the construction task is done depends on the engineer effort available and the priority assigned.

The Oxidation Pond must have a trained and knowledgeable operator available, but he will not need to be on duty at the lagoon at all times. Similarly, an operator must be available for the Packaged Plant, but not for 24 hours a day. Virginia state regulations, for example, require a trained operator for such a plant to be on duty at least four hours a day. The wastewater collection trucks, on the other hand, will require at least five drivers for the trucks for each module.

As Section 3.3.2.1.2 indicated, the Collect and Haul Away Approach can be used only when the host nation or supported agency can provide a treatment plant or other acceptable disposal site within a reasonable distance of the Force Provider module. Likewise, an oxidation pond or stabilization pond can be constructed only when sufficient area (about 5.5 acres) is available near the module. Burn-out latrines and free discharge of shower and laundry are not authorized in many areas, particularly in the U. S. Thus the Packaged Wastewater Treatment Plant is the only approach which could be employed anywhere, without restriction.

Maintenance requirements also vary considerably among the three approaches. Those for the Oxidation Pond are very low. The only mechanical part of this system is the chlorinator and it requires little maintenance. The Field Sanitation Approach does not involve equipment, but it does require regular inspection and cleaning of the grease traps. Most packaged plants have pumps and air compressors which need some repair, but maintenance requirements will still be relatively low. The wastewater collection trucks, on the other hand, will require much more maintenance -- particularly with the high annual mileage anticipated.

An oxidation pond relies on natural biological treatment processes, algae, and sunlight. Since there is little to go wrong, the process is very reliable. Most packaged treatment plants use essentially the same processes in a controlled environment and are also quite reliable. The Field Sanitation Approach is normally quite reliable, although some soils can clog easily and block further seepage. The Collect and Haul Away Alternative is also quite simple in theory. With so many trucks and drivers involved, however, some spillage is likely, and accidents are always a possibility.

When an overseas Force Provider deployment has finished, cleaning the wastewater collection trucks and the packaged plant for return to CONUS would probably require steam cleaning to meet the strict U. S. entry requirements. The oxidation pond, on the other hand, would be left in place for the natural processes to complete the stabilization. The Field Sanitation Approach would require that seepage pits and any pit latrines be closed and properly marked.

As Section 3.3.3 indicated, The Operational Requirements Document for the Force Provider plans Initial Procurement for FY 1995 and Initial Operational Capability (IOC) in FY 1996. The Wastewater Treatment System is identified as a Preplanned Product Improvement (P3I) but should follow the Force Provider with minimum delay. The Field Sanitation Approach and the Oxidation Pond are the only approaches which can probably meet the Force Provider schedule without difficulty. The earliest fielding date estimated for the Collect and Haul Away Approach is FY 1999, and the Packaged Plant would probably be fielded a year later. If it is possible to speed up these procurements, it would be expensive.

As this discussion indicates, these non-dollar costs are not so easy to quantify as dollar costs. Nevertheless, they need to be considered in selecting among the alternative approaches.

3.4 TRADE-OFF ANALYSES

3.4.1 Cost Uncertainties

3.4.1.1 Acquisition Strategy

One area of uncertainty which affects the Decision Cost Estimates of all approaches is the acquisition strategy adopted. As Section 3.3.2.1.1 indicated, the basic cost estimates for all approaches assumed a modified NDI acquisition strategy leading to type classification. In this Trade-Off Analysis, however, the following two alternative acquisition strategies were also evaluated:

- Modified NDI leading to operational stocks
- Service Contract

In general, an acquisition strategy leading to operational stocks can be expected to reduce RDT&E Costs slightly. Less extensive testing requirements should reduce Testing costs, and the elimination of some acquisition documentation should reduce Development Engineering costs. Manufacturing costs, the principal component of Procurement costs, would be unchanged, but second destination shipping costs would be eliminated, since the equipment would remain at depot. This reduction in Procurement funds, however, would be offset by an increase in O&M costs as the equipment is withdrawn from depot stocks for each deployment. Since these Transportation costs would be spread across the operating years instead of being concentrated in one or two fielding years, inflation would increase the current dollar cost of the program.

A service contract can be either with Government Furnished Equipment (GFE) or with contractor furnished equipment. A service contract with Government Furnished Equipment appears to offer very little possibility of cost savings. RDT&E and Procurement costs would remain about the same as for the NDI approach. O&M costs would probably increase, because of the contractor's overhead and profit requirements. Thus total costs would probably increase. Consequently this alternative will not be further considered.

A service contract with contractor furnished equipment, however, seems to offer more possibilities. Both RDT&E and Procurement costs would be virtually eliminated. O&M costs per deployment would probably increase, because of the contractor's overhead and profit requirements. Thus if we assume the same number and frequency of deployments as for the NDI approach, O&M costs would increase. If the planning estimates are not correct, however, and all 36 Force Provider modules are never deployed at once, the service contract could produce real savings -- the contractor would be paid essentially for deployments.

3.4.1.2 Collect and Haul Away Approach

All estimates are by their nature uncertain, but the uncertainties in this Best Technical Approach (BTA) are considerably greater in some areas than in others. In addition to the uncertainties derived from the acquisition strategy discussed in Section 3.4.1.1, several other uncertainties in the Decision Cost Estimate for the Collect and Haul Away Approach should be noted. The RDT&E (Development) Costs were based on those for similar programs. The analyst based estimates of the manufacturing cost on the current cost for a specific 1000-gallon water tanker/distributor, LIN G28212, which was obtained from the PM at TACOM. The number of trucks required, however, was based on the estimates discussed in Section 3.3.2.1.2, which may not be correct. In particular, there is a large difference between the estimate of 70 gallons per person per day found in environmental engineering texts and state regulations and the 48 gallons per day stipulated for Force Provider. Estimates of replenishment parts costs per mile, on the other hand, are based on data developed by the US Army Cost and Economic Analysis Center (USA CEAC) from Sample Data Collection (SDC). POL Costs are based on average fuel consumption for the 939 Series developed by the USA CEAC. The principal area of uncertainty for the O&M costs is the average miles per year per truck, which

was based on the assumptions on deployments and average haul distance discussed in Section 3.3.2.1.2

3.4.1.3 Packaged Wastewater Treatment System

Some of the uncertainties in the cost estimates for the Packaged Wastewater Treatment System parallel those for the Collect and Haul Away Approach. The uncertainties resulting from the choice of an acquisition strategy affect both systems, although the results are, of course, not precisely the same. Similarly, the RDT&E costs are based on the same earlier systems, the 1500 GPH and the 3000 GPH Reverse Osmosis Water Purification Units (ROWPU). The higher costs for the plant selection reflect the fact that the task of selecting a plant is more complicated than mounting a suitable tank and pump on an existing truck chassis. Manufacturing costs were based on those for a specific system, the 40 ISO STF manufactured by Waterworks Technologies. If a different system is selected, costs could be either higher or lower. Under O&M costs, depot level reparables and consumables were estimated as a percentage of manufacturing cost. If a system with a different manufacturing cost were selected, these estimates would also change. The estimates for POL costs were based on the PU-625 power unit. The POL costs for hour for this unit are based on information collected by the US Army Cost and Economic Analysis Center (USA CEAC) from Sample Data Collection (SDC) and are probably accurate. The average operating hours per year, however, are based on the assumption that each Force Provider module will be deployed for an average of 90 days each year. This assumption was used for all four approaches and hence provides a valid basis for comparison, but it may turn out to be incorrect.

3.4.1.4 Oxidation Pond or Sewage Lagoon

The Decision Cost Estimates for the Oxidation Pond or Sewage Lagoon probably have fewer uncertainties than the two alternatives discussed above -- particularly for RDT&E and Procurement Costs. During the RDT&E phase two tasks will be accomplished. First, detailed blueprints will be developed for an oxidation pond for a 550-man Force Provider Module and for all six modules deployed together. TM 5-302 Army Facility Component Systems includes generic blueprints for oxidation ponds. Secondly an NDI chlorinator will be selected for treatment of the effluent from the oxidation pond when such treatment is needed. Both tasks are relatively simple. Although the cost estimates for them may not be precisely correct, they are not likely to be far wrong. Procurement costs cover the costs for acquiring a chlorinator and are based on an existing chlorinator manufactured by Chlorination, Inc. which appears to be suitable. If a different chlorinator is selected, costs would be slightly different. The O&M costs for depot level reparables and consumables were estimated as a percentage of manufacturing cost. If a chlorinator with a different manufacturing cost were selected, these estimates would also change. The largest cost element for the Oxidation Pond, and the one with the most uncertainties, is 5.12, where the costs of constructing the pond are captured. Standard environmental engineering rules were used to size the pond, construction equipment production factors from FM 5-34 were used to determine the equipment and hours required, and operating costs per hour were based on DA System Sustainment Cost

Factors. However, unusual site conditions could cause considerable divergences from these estimates.

3.4.1.5 Field Sanitation Approach

Since the cost of troop labor is excluded from the Decision Cost Estimates, the only significant cost included is for the POL used for the burn-out latrines. As Section 3.2.2.1 indicated, 24 toilets were assumed per module. FM 21-10-1 estimates about 1¼ gallons of a mixture of gasoline and diesel oil per toilet per day, and this is probably quite accurate. The assumption that each Force Provider module will be deployed for an average of 90 days a year was used for all approaches, but it may prove to be incorrect.

3.4.2 Sensitivity Analyses

3.4.2.1 General

In the sensitivity analyses the values of the input parameters in an area of uncertainty identified above were varied one at a time. The purpose of these analyses was to determine whether the outputs are sensitive to the input changes, to bound the estimates, and to highlight the cost drivers. This section reports the results of these analyses. Since changing the acquisition strategy can have effects across the entire Decision Cost Analysis, this portion of the analysis is presented separately from changes in the other assumptions and variables.

3.4.2.2 Alternative Acquisition Strategies

3.4.2.2.1 Collect and Haul Away Approach

As Section 3.4.1.1 indicated, changing the acquisition strategy to a modified NDI leading to operational stocks would slightly reduce the RDT&E (Development) Costs. Less extensive testing requirements should reduce Testing costs, and the elimination of some acquisition documentation should reduce Development Engineering costs. In this case, however, the wastewater collection tank and pump will be mounted on a standard 5-ton truck chassis. Since the truck itself has already been tested and type classified, the reduction in cost for these two cost elements is estimated at only 10%. This would reduce Cost Element 1.01 Development Engineering to $1,786K and 1.06 System Test and Evaluation to $106K. These two changes would reduce 1.0 RDT&E to $2,832K. Changing to a service contract, on the other hand, would eliminate all RDT&E costs.

With regard to Procurement Costs, changing to operational stocks would leave Manufacturing Costs unchanged, and second destination shipping costs, $482.5K, would be eliminated, since the equipment would remain at depot. This

reduction in Procurement funds, however, would be offset by an increase in O&M costs as the equipment is withdrawn from depot stocks for each deployment. Thus 2.0 Procurement would decrease by $482.5K and 5.0 O&M would increase by the same amount in constant dollars. Changing to a service contract, on the other hand, would eliminate all Procurement costs, since the contractor would be required to furnish the wastewater transport trucks.

Except for the second destination shipping costs discussed above, changing to operational stocks should not change O&M costs. Storing the equipment at a central location rather than at the location of the Army Reserve Force Provider Companies would probably have a negative effect on training, but it should not affect costs.

Changing to a service contract, however, would produce large changes. The contract would have to cover the contractor's cost both of acquiring and operating the wastewater collection trucks. The contractor could probably purchase the trucks at about the same cost as the Army. For operating costs, however, the contractor's costs would be increased by the cost of money (interest) for the initial investment, the wages of the drivers and other personnel, (military personnel costs were not included in the DCE), and allowances for risk and profit. The costs of transporting the contractor's equipment to the site would be roughly the same as those for transporting the same equipment owned by the Army. Hence these costs are excluded from the analysis. Consequently the costs for a service contract for the Collect and Haul Approach for 20 years with the deployment assumptions unchanged are estimated at about $51 million.

For the special case of operations in the U. S. at a location where commercial septic tank service is available, some additional data are available. The Force Provider PM indicates that during the operational test at Fort Bragg, N. C., 20,000 gallons of wastewater a day were collected and hauled to the Ft. Bragg treatment plant for 15 days for a total contract cost of $14K (FY93$). For 36 deployments of 90 days each this would cost about $14/0.94990 * 6 *36 *20 = $63.7 million (FY95$). This is the same order of magnitude as the $51 million estimated above for a single contractor

3.4.2.2.2 Packaged Wastewater Treatment System

Selecting the acquisition strategy of a modified NDI leading to operational stocks would also reduce the RDT&E Costs for the Packaged Wastewater Treatment System. Less extensive testing requirements should reduce Testing costs, and the elimination of some acquisition documentation should reduce Development Engineering costs. This development program is more extensive than that for the Wastewater Transport Vehicle, since it involves selecting and testing two alternative NDI systems. Consequently the reduction in cost for these two cost elements is estimated at 20%. This would reduce Cost Element 1.01 Development Engineering to $1,787K and 1.06 System Test and Evaluation to $194K. These two changes would reduce 1.0 RDT&E to $6,390K. Changing to a service contract, of course, would eliminate all RDT&E costs.

An acquisition strategy leading to operational stocks would leave the Manufacturing Costs of the Packaged Plant approach unchanged but would move second destination shipping costs, $59.9K, from Procurement to O&M. Thus 2.0 Procurement would decrease to $4,720K, and 5.0 O&M would increase to $3,896K. Changing to a service contract would eliminate all Procurement costs, since the contractor would be required to furnish the packaged plant.

Changing to operational stocks for the Packaged Plant should not change O&M costs, except for the second destination shipping costs discussed above. Storing the equipment at a central location rather than at the location of the Army Reserve Force Provider Companies would probably have a smaller negative effect on training than for the Collect and Haul Away Approach, since only the training of the wastewater treatment specialist/plant operator would be affected.

Changing to a service contract would produce more significant changes, because the contractor would have to buy and operate the packaged plant. Since the plants being considered are presently available, the cost to the contractor would be essentially the same as the cost to the Army. As Section 3.4.2.2.1 indicated, the contract would have to include the contractor's cost of money (interest) for the initial investment, the salary of the wastewater treatment plant operator and any other required personnel, and allowances for risk and profit. Although drivers were assumed to be third country nationals or hired locally, wastewater treatment plant operators qualified for the particular packaged plant selected would probably need to be kept on the payroll or on retainer to be available when required. Consequently, the costs for a service contract for the Packaged Plant for 20 years with the deployment assumptions unchanged are estimated at $14.65 million.

3.4.2.2.3 Oxidation Pond or Sewage Lagoon

Changing the acquisition strategy to a modified NDI leading to operational stocks would have a very small effect on the RDT&E (Development) Costs of the Oxidation Pond Alternative, since the only hardware envisioned is the selection of an NDI chlorinator. Less extensive testing requirements should reduce Testing Costs by about 20%, but this is only from $117.31K to $93.8K. Similarly, the elimination of some acquisition documentation should reduce Development Engineering costs from $208.88K to $187.1K. The portion of Development Engineering costs devoted to producing standardized blueprints for the oxidation pond would, of course, be unchanged. Thus these two changes would reduce 1.0 RDT&E to $373.9K, a rather insignificant reduction. As for the other two alternatives, changing to a service contract would eliminate all RDT&E costs, except perhaps the $100K for preparing the standardized blueprints.

As for the other alternatives, changing the acquisition strategy to lead to operational stocks would shift second destination shipping costs from Procurement to O&M Costs. In this case, however, these costs amount to only about $3K, since

only the chlorinators are involved. Changing to a service contract would, of course, eliminate all Procurement costs, since the contractor would be required to supply the chlorinators.

Except for the small second destination shipping costs discussed above, changing to operational stocks for the chlorinators should not change O&M costs, Storing the chlorinators at a central location rather than at the location of the Army Reserve Force Provider Companies would probably have only a minor negative effect on training, since only the training of the wastewater treatment specialist/plant operator would be affected.

Changing to a service contract would produce significant changes on O&M Costs. If the contractor were required to mobilize construction equipment in the Theater of Operations only to construct oxidation ponds for Force Provider, costs would clearly be prohibitive. For this analysis, however, it is assumed that the equipment would be required for other tasks under the LOGCAP contract. Even under this assumption, however, the costs to the contractor have to include the cost of money (interest) for the construction equipment and for the chlorinators, the salary of the equipment operators any other required personnel, and allowances for risk and profit. Consequently, the costs for a service contract for the Oxidation Pond Approach for 20 years with the deployment assumptions unchanged are estimated at $16.829 million.

3.4.2.2.4 Field Sanitation Approach

Since the Field Sanitation Approach involves no RDT&E nor equipment acquisition, changing to an acquisition strategy leading to operational stocks would not change the Decision Cost Estimate.

Changing to a service contract, however, would replace the labor details for digging seepage pits and operating the burn-out latrines with contractor employees. Consequently, this alternative would clearly increase decision costs, since the costs of troop labor were excluded from the Decision Cost Estimate. These employees would probably receive the minimum wage, but this differs dramatically in different parts of the world. Assuming that half the deployments are in the U. S. for training or disaster relief, the contract cost over 20 years is estimated at $16,200K. If more of the deployments are to less developed areas overseas, the costs would, however, be lower.

3.4.2.2.5 Summary of Decision Costs for Alternate Acquisition Strategies

Figures 3-11 and 3-12 present the Decision Costs of the four approaches under the alternative acquisition strategies.

	COLLECT AND HAUL AWAY	PACKAGED PLANT	FIELD SANITA-TION	OXIDATION POND
APPENDIX	D	E	N/A	F
1.0 RDT&E	2,832.0	3,037.0	0.0	373.9
1.01 Development Engineering	1,786.0	1,787.0	0.0	187.1
2.0 PRO-CUREMENT	7,999.0	4,720.0	0.0	237.6
2.021 Manufacturing	5,736.0	2,921.0	0.0	60.3
3.0 MIL CONSTRUCTION	0.0	0.0	0.0	0.0
4.0 MIL PERSONNEL	0.0	0.0	0.0	0.0
5.0 O&M	36,330.0	3,896.0	1,322.0	4,308.0
5.03 Depot Level Reparables	2,228.0	1,460.0	0.0	31.6
5.04 Consumables	24,060.0	1,460.0	0.0	31.6
5.05 POL	5,791.0	715.4	1,322.0	0.0
5.061 Overhaul	2,868.0	0.0	0.0	0.0
5.12 Other: O&M Costs for Constructing Ponds	0.0	0.0	0.0	4,142.0
TOTALS	47,160.0	11,650.0	1,322.0	4,920.0

Figure 3-11 Dollar Decision Costs for OPERATIONAL STOCKS

(In Thousands of FY 1995 CONSTANT Dollars)

	COLLECT AND HAUL AWAY	PACKAGED PLANT	FIELD SANITA-TION	OXIDATION POND
APPENDIX	D	E	N/A	F
1.0 RDT&E	0.0	0.0	0.0	100.0
1.01 Development Engineering	0.0	0.0	0.0	100.0
2.0 PRO-CUREMENT	0.0	0.0	0.0	0.0
2.021 Manufacturing	0.0	0.0	0.0	0.0
3.0 MIL CONSTRUCTION	0.0	0.0	0.0	0.0
4.0 MIL PERSONNEL	0.0	0.0	0.0	0.0
5.0 O&M	51,140.0	14,650.0	17,520.0	16,830.0
5.03 Depot Level Reparables	0.0	0.0	0.0	0.0
5.04 Consumables	0.0	0.0	0.0	0.0
5.05 POL	0.0	0.0	0.0	0.0
5.061 Overhaul	0.0	0.0	0.0	0.0
5.12 Other: O&M Costs for Constructing Ponds	0.0	0.0	0.0	16,830.0
TOTALS	51,140.0	14,650.0	17,520.0	16,930.0

Figure 3-12 Dollar Decision Costs for SERVICE CONTRACT

(In Thousands of FY 1995 CONSTANT Dollars)

3.4.2.2.6 Analysis of Decision Costs for Alternate Acquisition Strategies

A comparison of the Decision Costs for Operational Stocks in Figure 3-11 with those for the base case in Figure 3-8 (page 3-18) indicates that changing the acquisition strategy to one leading to operational stocks would reduce the costs of all the approaches except for the Field Sanitation Approach. The reductions are principally in RDT&E Costs and result largely from less extensive testing requirements and the eliminationof some acquisition documentation. However, the reductions are quite small -- less than 1% for both the Collect and Haul Away Approach and the Oxidation Pond and only 4% for the Packaged Plant Approach. These reductions are smaller than the margin of error of the estimates.

The total Decision Costs for a service contract shown in Figure 3-12, on the other hand, are considerably higher than the base case estimates shown in Figure 3-8 for all four approaches. The service contract essentially eliminates both RDT&E Costs and Procurement Costs. However, the contractor would incur virtually the same procurement costs, since he would be required to furnish the equipment. In addition, the contractor's operating costs would be higher than those of the Army by the cost of money (interest) for the initial investment in equipment; the salaries of the drivers, treatment plant operators, construction equipment operators, and other personnel (military personnel costs were not included in the DCE); and allowances for risk and profit. Therefore, total costs using a service contract are higher than the base case for all approaches. With a service contract, the costs for the Packaged Wastewater Treatment Plant Approach are lower than those for the other three approaches.

It should be recalled, however, that these comparisons use the same deployment assumptions -- 90 days per year for each module. If Force Provider is rarely deployed, the service contract could produce savings, since payment is largely for each deployment under such a contract. The contractor would probably try to keep his initial investment to a minimum unless required to do otherwise under the terms of the contract. For example, if only one module were deployed for 90 days each year instead of 36, the contractor would purchase much less equipment, and total costs for the Collect and Haul Approach would decrease to about $1,420K. Corresponding costs for the other alternatives would be about $521K for the Packaged Plant, $568K for the Oxidation Pond, and only $36.7K for the Field Sanitation Approach. With normal NDI procurement, on the other hand, the Army makes a considerable up-front investment before there are any deployments. This is especially true for he Collect and Haul Away Approach and for the Packaged Plant Approach.

3.4.2.3 Other Sensitivity Analysis

3.4.2.3.1 Collect and Haul Away Approach

The Development Engineering Costs for the Collect and Haul approach were based on those for the 1500 GPH and the 3000 GPH Reverse Osmosis Water Purification Units (ROWPU), reduced because the wastewater transport truck is a much simpler piece of equipment. The level of effort, 34 manyears contract and 10 manyears government, still seems rather high. If it were reduced by 50%, Development Engineering would be reduced to $2,218.0K and 1.0 RDT&E to $3,276K.

For costing purposes the Wastewater Transport Truck was estimated to cost the same as the 1000-gallon water distributor, LIN G28212. The PM at TACOM gave the current cost of this truck as $31K each (FY94$). Compared to other Army vehicles, this price is low -- the 5-ton dump truck, for example costs $140K. Consequently the manufacturing cost of the Wastewater Transport Truck could easily be double that in the basis cost estimate, $62K (FY94$) or $62.734K (FY95$). This would increase 2.021 Manufacturing Costs to $13,550K and 2.0 Procurement to about $16,660K. In addition, the number of trucks is based on a number of assumptions (discussed in Section 3.3.2.1.2), which include 48 gallons per person per day. If the standard environmental engineering planning factor of 70 gallons per day were used, the total number of trucks required would be increased to 252. This would increase the Manufacturing Cost to $8,233K and 2.0 Procurement to $10,870K. If the increase in cost and the increase in cost of the trucks were combined, Element 2.021 would increase to $16,060K and total Procurement to about $21,740K.

As Section 3.4.1.2 indicated, estimates of both replenishment parts and POL costs per mile are based on data developed by the US Army Cost and Economic Analysis Center (USA CEAC) from Sample Data Collection (SDC) and are probably accurate. The average miles per year per truck and the number of trucks, however, are based on a number of assumptions. The preceding paragraph discussed the impact on procurement costs of using a planning factor of 70 gallons per person per day. Using this factor would also increase the total parts cost to $36,800K, the POL costs to $8,108K and total O&M Costs to $50,096K.

The basic estimate assumed that each Force Provider will be deployed for 90 days each year on the average. An alternate minimum assumption might be 30 days per year. This would reduce the total of Depot Level Reparables and Consumables from $26,284K to $8,762K and POL to $1,931K. These changes would reduce 5.0 O&M to about $12,020K. Average deployment of more than 90 days per year for each Force Provider unit is possible, but not likely.

More likely is increased mileage because of a greater haul distance. As Section 3.3.2.1.2 indicated, the basic estimate assumed an average round trip haul distance of only 25 miles. This is quite short. If the round trip distance increased to 50

miles, the total of Depot Level Reparables and Consumables would increase to $52,560K and POL to $11,480K. These changes would increase 5.0 O&M to $71,480K. If this change in mileage were combined with the increase in wastewater to 70 gallons per person per day, total parts cost would increase to $73,600K, POL costs to $16,220K, and total O&M Costs to $95,010. The magnitude of these changes indicate how sensitive these estimates are to changes in annual mileage.

3.4.2.3.2 Packaged Plant Approach

The estimates of the RDT&E Costs for the Packaged Plant Approach are based on a compressed development schedule which depends on the availability of suitable commercial plants and acceptable commercial data and assumes a minimum of matrix support. If these assumptions turn out not to be correct, a much more extensive development program would be required. For Development Engineering this might require as much as 12 manyears of effort (Government and contract) during CE/DEMVAL and 48 manyears during EMD. This would increase 1.01 costs to $6,049K and RDT&E to $7,648K.

The schedule for the Packaged Plant, on the other hand, is slower than would be desirable. It assumes one year of CE/DEMVAL in FY 1995 and two years of EMD from FY 1996 through 1997. Since the Force Provider is scheduled for Initial Operational Capability (IOC) in FY 1996, it would clearly be desirable to expedite the development schedule for the Packaged Plant. If the Packaged Plant program can be expedited to begin production in FY 1997 or FY 1996, it will certainly be more expensive. With a 25% increase, Development Engineering would be $2,792K and Total RDT&E $4,110K. This increase is much less significant than the one discussed above.

As Section 3.4.1.3 indicated, the estimates for the Manufacturing Cost were based on a specific plant, one produced by Waterworks Technologies. If another plant were selected, the Manufacturing Cost would, of course, be different. Costs for the plants in the market survey ranged from about $50K to a high of $373K each. It is unlikely that the Army would select the most expensive plant, but there are several choices in the $135K to $160K range. If a plant costing $150K were selected, total manufacturing cost would increase to $5,400K. Since Engineering Changes and both Initial Depot Level Reparables and Initial Consumables were estimated as a percentage of Manufacturing Cost, these costs would also be higher. Therefore, 2.0 Procurement Costs would increase to $7,581K. On the other hand, if one of the cheapest plants were selected, the cost would be as low as $50K each. With this cost, total Manufacturing Cost would be $1,800K and total Procurement $3,513K.

Since replenishment depot level reparables and consumables are both estimated as a percentage of manufacturing cost, the change in the manufacturing cost would also increase these O&M costs. Using the higher estimate for manufacturing cost, $150K each, would increase the total of depot level reparables and consumables from $2,920K to $5,398K and total O&M costs to $5,814K. On the other hand,

using the lowest price, $50K each, would decrease the total of depot level reparables and consumables to $1,799K and total O&M costs to $2,715K.

For the Collect and Haul Away Approach, Section 3.4.2.3.1 investigated the effects of changing the deployment from 90 days per year per module to 30 days per year. If this same change were made for the Packaged Plant approach, the costs for POL to operate the generator would decrease from $715.4K to $238.5K. This would decrease 5.0 O&M Costs from $3,836K to $3,359K. Just as for the Collect and Haul Away Approach, an average deployment for each Force Provider module of more than 90 days per year is possible, but not likely.

3.4.2.3.3 Oxidation Pond or Sewage Lagoon

As Section 3.4.1.4 indicates, two tasks will be accomplished during the RDT&E phase for this approach. First, detailed blueprints will be developed for an oxidation pond for a 550-man Force Provider Module and for all six modules deployed together. Secondly, an NDI chlorinator will be selected for treatment of the effluent from the oxidation pond when such treatment is needed. Both tasks are relatively simple, and their costs are low. If both costs increased by 50%, 1.01 Development Engineering would increase only to $313,3K and total RDT&E Costs to $523.7K. The increase, $104.4K, is only 2% of total Decision Costs and hence is not significant.

Similarly, the Manufacturing Cost of the chlorinator was based on the catalog prices obtained from manufacturers. Even if the cost increased by 50%, to $2.64K each, Total Manufacturing Cost would increase only to $94.95K and Total Procurement Cost to $269.3K. The change this produces in Total Decision Cost is less than 1% and hence is not significant.

As Section 3.4.1.4 indicated, the largest Cost Element for the Oxidation Pond, and the one with the most uncertainties, is 5.12, where the costs of constructing the pond are captured. The deployment assumptions used were the same as for the other approaches: a 90-day deployment every year for each module. In the case of the oxidation pond, the length of the deployment is essentially irrelevant -- once constructed, a pond can be used for many years. The number of deployments is, however, critical, since an oxidation pond must be constructed at each new location. If the assumption is changed to deployment to a new location only every other year, the Reserve Force Provider Companies would return to the same location for the second year. Under this assumption the construction costs would be reduced to $2,071K and 5.0 O&M Costs to $2,234K.

To size the pond, standard environmental engineering rules were used. These call for 1 acre per 100 people supported, or 5½ acres for a Force Provider module. In hot climates, smaller oxidation ponds could be used. The Army Facility Component System, for example, recommends a 2-acre pond to support 500 to 700 people where the minimum mean monthly temperature is above 41°F. If half of the ponds were in hot areas,

with a surface area of only 2 acres each, the construction costs would decrease to $3,107K and Total O&M Costs to $3,270K.

Construction equipment production factors from FM 5-34 were used to determine the equipment and hours required, and operating costs per hour were based on DA System Sustainment Cost Factors. The equipment production factors are based on average terrain and typical experienced military operators. In addition, the calculations assumed that the soil is suitable for construction of the berms and that brush, trees, and spoil are pushed aside and left. If site conditions are less suitable, production rates will go down and costs will go up. In less favorable terrain, production rates could easily decrease by 50%. If this were true for all the sites, construction costs would increase to $6,213K and Total O&M Costs to $6,376K.

3.4.2.3.4 Field Sanitation Approach

As for the other three approaches, the costing for the Field Sanitation Approach assumes a 90-day deployment every year for each module. If this were reduced to 30 days per year, POL costs and Total O&M Costs would decrease to $441K.

3.4.2.3.5 Summary of Sensitivity Analysis

Figure 3-13 presents a summary of the results of the sensitivity analysis.

APPROACH	COST ELEMENT NUMBER AND TITLE	PARAMETER CHANGED AND RATIONALE	COST ELEMENT LOW/HIGH	TOTAL COST CATEGORY LOW/HIGH	COMMENTS
Collect and Haul Away	1.01 Development Engineering	Engineering Effort increased to 34 manyears contract and 10 government.	2,360 4,436	3,491 5,494	
Collect and Haul Away	2.021 Manufacturing Cost	Cost of truck increases to $62.734 each.	6,777 13,550	9,883 16,660	
Collect and Haul Away	2.021 Manufacturing Cost	Standard State Planning Factor of 70 gal/person/day	5,736 8,030	8,482 10,870	When combined with increased cost of truck, 5.0 would = 21,740. Would also increase O&M Costs.
Collect and Haul Away	5.03 Replen: Depot Level Reparables 5.04 Replen: Consumables 5.05 POL	Standard State Planning Factor of 70 gal/person/day	Parts:26,280 POL:5,792 Parts:36,800 POL:8,108	35,840 50,096	

Figure 3-13 (Continued through page 3-39) Summary of Results of Sensitivity Analyses

(Costs in Thousands of FY 95 Dollars)

APPROACH	COST ELEMENT NUMBER AND TITLE	PARAMETER CHANGED AND RATIONALE	COST ELEMENT LOW/HIGH	TOTAL COST CATEGORY LOW/HIGH	COMMENTS
Collect and Haul Away	5.03 Replen: Depot Level Reparables 5.04 Replen: Consumables 5.05 POL	Average Deployment 30 Days per Year Instead of 90.	Parts:8,762 POL:1,931 Parts:26,280 POL:5,792	12,020 35,840	
Collect and Haul Away	5.03 Replen: Depot Level Reparables 5.04 Consumables 5.05 POL	Average Round Trip Haul Distance Increased to 50 miles.	Parts:26,280 POL:5,792 Parts:52,560 POL:11,580	35,840 71,480	When combined with 70 gal/day/person, 5.0 = 95,010.
Packaged Plant	1.01 Development Engineering	Manhours increased to 60.	2,234 6,049	3,532 7,648	
Packaged Plant	1.01 Development Engineering	Expedited Schedule: Manhours increased by 25%	2,234 2,792	3,532 4,110	
Packaged Plant	2.021 Manufacturing Cost	Manufacturing Cost Low: $50K Each High: $150K Each	1,800 5,400	3,513 7,581	Will also affect O&M Costs.

Figure 3-13 (Continued through page 3-39) Summary of Results of Sensitivity Analyses

(Costs in Thousands of FY 95 Dollars)

APPROACH	COST ELEMENT NUMBER AND TITLE	PARAMETER CHANGED AND RATIONALE	COST ELEMENT LOW/HIGH	TOTAL COST CATEGORY LOW/HIGH	COMMENTS
Packaged Plant	5.03 Replen: Depot Level Reparables 5.04 Replen: Consumables	Manufacturing Cost Low: $50K Each High: $150K Each	1,799 5,398	2,715 6,314	
Packaged Plant	5.05 POL Cost	Average Deployment 30 Days per Year Instead of 90.	238.5 715.4	3,359 3,836	Combining $50K Manufacturing Cost with 30-Day Deployment Would Reduce O&M to $2,239K.
Oxidation Pond	1.01 Development Engineering	Manhours increased by 50%.	208.9 313.3	419.2 523.7	Resulting changes are not significant.
Oxidation Pond	2.021 Manufacturing Cost	Manufacturing Cost Increased by 50% to $2.64K each.	63.3 94.9	237.6 269.3	Resulting changes are not significant.
Oxidation Pond	5.12 O&M Cost for Constructing Ponds.	Average one Pond per module every other year instead of every year.	2,071 4,142	2,234 4,305	

Figure 3-13 (Continued through page 3-39) Summary of Results of Sensitivity Analyses

(Costs in Thousands of FY 95 Dollars)

APPROACH	COST ELEMENT NUMBER AND TITLE	PARAMETER CHANGED AND RATIONALE	COST ELEMENT LOW/HIGH	TOTAL COST CATEGORY LOW/HIGH	COMMENTS
Oxidation Pond	5.12 O&M Cost for Constructing Ponds.	Half of Ponds are in Hot Areas with Surface Areas of 2½ Acres Each.	3,107 4,142	3,270 4,305	Combining this with Reduced Deployment above Would Reduce O&M to $1,717.
Oxidation Pond	5.12 O&M Cost for Constructing Ponds.	Less Favorable Terrain: 50% Increase in Costs	4,142 6,213	4,305 6,376	
Field Sanitation	5.05 POL.	Average Deployment 30 Days per Year Instead of 90.	441 1,332	441 1,332	

Figure 3-13 (Concluded) Summary of Results of Sensitivity Analysis

(Costs in Thousands of FY 1995 Dollars)

3.4.3 Uncertainty Analysis

3.4.3.1 General

In the Sensitivity Analyses in Section 3.4.2 the values of input parameters in the various areas of uncertainty were varied one at a time and the resulting changes calculated and analyzed. In the Uncertainty Analysis, on the other hand, the values of an entire set of parameters were changed at one time. This section reports the results of this analysis.

3.4.3.2 High Estimates

Figure 3-14 presents the Decision Costs of the alternatives using the HIGHEST estimates from the Sensitivity Analyses above for each cost element. Section 3.4.1.2 indicated that there are significant cost uncertainties for the Collect and Haul Away Approach -- particularly the number of trucks and the average miles per year per truck, which were based on assumptions on the amount of wastewater and on deployment and average haul distance discussed in Section 3.3.2.1.2. Largely because of these uncertainties, the costs for this approach have increased more than for any of the others. It is still the most expensive alternative, and by a larger margin than in the basic analysis. The Field Sanitation Approach remains the cheapest approach. Its costs did not change from the base estimate. The Oxidation Pond or Sewage Lagoon is the next cheapest, even though the estimated cost for constructing the ponds increased 33% because of assuming less favorable terrain. The Packaged Plant remains much cheaper than the Collect and Haul Away Approach, although it is still considerably more expensive than the Oxidation Pond.

3.4.3.3 Low Estimates

Figure 3-15 presents the Decision Costs of the approaches using the LOWEST estimates from the Sensitivity Analyses above for each cost element. The order among the alternatives ranked by cost is the same as for the high estimates, although the differences between alternatives are, of course, smaller. The Collect and Haul Away Approach is again the most expensive alternative and the Field Sanitation Approach is the cheapest, followed by the Oxidation Pond. Combining the assumptions of reduced deployment and favorable hot climate for half of the deployments considerably reduced the costs of constructing the ponds.

3.4.3.4 High-Low Comparisons

Figure 3-16 presents the results of the Uncertainty Analysis of the four alternatives in graphical form. The vertical lines show the ranges between the high and low estimates for each alternative. The horizontal tick marks indicate the basic estimates for each system.

	COLLECT AND HAUL AWAY	PACKAGED PLANT	FIELD SANITA-TION	OXIDATION POND
APPENDIX	D	E	N/A	F
1.0 RDT&E	5,494.0	7,648.0	0.0	523.7
1.01 Development Engineering	4,436.0	6,049.0	0.0	313.3
2.0 PRO-CUREMENT	21,740.0	7,581.0	0.0	269.3
2.021 Manufacturing	16,060.0	5,400.0	0.0	94.9
3.0 MIL CONSTRUCTION	0.0	0.0	0.0	0.0
4.0 MIL PERSONNEL	0.0	0.0	0.0	0.0
5.0 O&M	95,010.0	6,314.0	1,332.0	6,376.0
5.03 Depot Level Reparables	6,238.0	2,699.0	0.0	31.6
5.04 Consumables	67,360.0	2,699.0	0.0	31.6
5.05 POL	16,220.0	715.4	1,332.0	0.0
5.061 Overhaul	4,015.0	0.0	0.0	0.0
5.12 Other: O&M Costs for Constructing Ponds	0.0	0.0	0.0	6,213.0
TOTALS	122,200.0	21,540.0	2.0	7,169.0

Figure 3-14 Dollar Decision Costs - HIGH Estimates for NI ı Type Classification

(In Thousands of FY 1995 CONSTANT ;)

	COLLECT AND HAUL AWAY	PACKAGED PLANT	FIELD SANITA-TION	OXIDATION POND
APPENDIX	D	E	N/A	F
1.0 RDT&E	3,287.0	3,532.0	0.0	419.2
1.01 Development Engineering	2,229.0	2,234.0	0.0	208.9
2.0 PRO-CUREMENT	5,435.0	3,513.0	0.0	237.6
2.021 Manufacturing	4,015.0	1,800.0	0.0	63.3
3.0 MIL CONSTRUCTION	0.0	0.0	0.0	0.0
4.0 MIL PERSONNEL	0.0	0.0	0.0	0.0
5.0 O&M	12,020.0	2,239.0	441.0	1,717.0
5.03 Depot Level Reparables	743.0	900.0	0.0	31.6
5.04 Consumables	8,020.0	900.0	0.0	31.6
5.05 POL	1,931.0	238.5	441.0	0.0
5.061 Overhaul	956.0	0.0	0.0	0.0
5.12 Other: O&M Costs for Constructing Ponds	0.0	0.0	0.0	1,554.0
TOTALS	20,740.0	9,284.0	441.0	2,374.0

Figure 3-15 Dollar Decision Costs LOW Estimates for NDI with Type Classification

(In Thousands of FY 1995 CONSTANT Dollars)

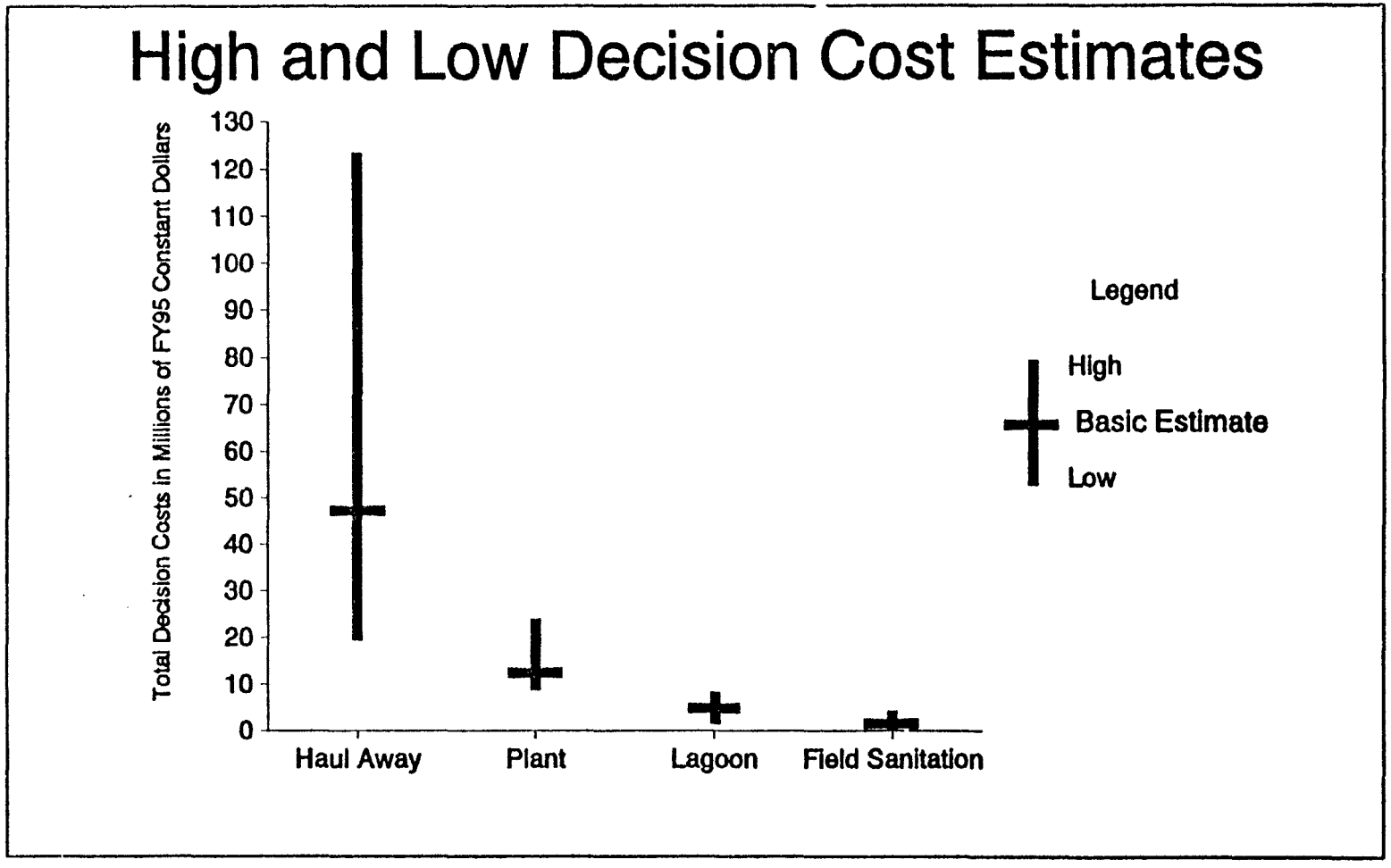

Figure 3-16 High and Low Decision Cost Estimates

The Collect and Haul Away Approach is the most expensive under all assumptions and the Oxidation Pond or Sewage Lagoon is the cheapest. There is a small overlap among the costs of the approaches -- the lowest estimates for the Collect and Haul Away Approach are almost the same as the highest estimates for the Packaged Plant. Similarly, the lowest estimates for the Packaged Plant Approach are very close to the Highest estimates for the Oxidation Pond. These differences, in fact, are so small that they are within the margin of error of the estimates.

3.4.3.5 Conclusions of the Uncertainty Analysis

Although the Uncertainty Analysis produces quite large changes in the dollar decision costs, there are no changes in the ordinal comparison among the three approaches. The Collect and Haul Away Approach is always the most expensive approach, and Field Sanitation Approach, is always the cheapest, followed by the Oxidation Pond or Sewage Lagoon.

Even though it does not produce changes in the ranking of the approaches, the Uncertainty Analysis does underline the importance of considering a range of costs rather than a single estimate for each cost element. The Uncertainty Analysis also provides envelopes within which the actual system costs have a very high probability of falling. In addition, Figure 3-16 clearly indicates the overlap in the cost estimates for the different alternatives.

3.5 DECISION CRITERIA FOR SYSTEM SELECTION

- COST: Field Sanitation is the cheapest approach. Its 20-year cost is $3.6 million less than the Oxidation Pond and $14.9 million less than a Packaged Plant.
- SCHEDULE: The Field Sanitation Approach and the Oxidation Pond can both be implemented almost immediately.
- PERFORMANCE: The Oxidation Pond has the best performance, followed by the Packaged Plant.
- OPERATIONS: The Packaged Plant is the only approach which can be used in virtually every situation.
- OVERALL: The Oxidation Pond offers the best performance at the least cost. When site conditions or local regulations do not permit its use, the Packaged Plant can meet the need at minimum extra cost.

SECTION 4

SUMMARY OF RESULTS

4.1 THE ACQUISITION ISSUE

The Army needs a sound wastewater management plan for the Force Provider package. Developing and implementing such a plan will contribute to controlling the potential health threat posed by waste-borne diseases in the field and will also satisfy environmental regulations and concerns, as directed in Defense Planning Guidance.

4.2 ALTERNATIVES

4.2.1 Technical Approaches

This Best Technical Approach Analysis examined four technical approaches:

- Collect and Haul Away Approach
- Packaged Wastewater Treatment System
- Oxidation Pond or Sewage Lagoon
- Field Sanitation Approach: Burn-Out Latrines and Soakage Pits

4.2.2 Acquisition Strategies

In addition, three different acquisition strategies were considered:

- Modified NDI leading to Type Classification.
- Modified NDI leading to operational stocks
- Service Contract (Like LOGCAP)

4.3 ANALYSIS AND COMPARISON OF ALTERNATIVES

4.3.1 Cost Analysis

4.3.1.1 Decision Costs

Figure 4-1 shows the Dollar Decision Costs for the four alternative approaches in thousands of FY 1995 constant dollars. (Detailed estimates for the individual Cost Elements are included in the Appendices indicated.)

	COLLECT AND HAUL AWAY	PACKAGED PLANT	FIELD SANITA-TION	OXIDATION POND
APPENDIX	D	E	N/A	F
1.0 RDT&E	3,287.0	3,532.0	0.0	419.2
2.0 PRO-CUREMENT	8,482.0	4,780.0	0.0	237.6
3.0 MIL CONSTRUCTION	0.0	0.0	0.0	0.0
4.0 MIL PERSONNEL	0.0	0.0	0.0	0.0
5.0 O&M	35,840.0	3,836.0	1,322.0	4,305.0
TOTALS	47,610.0	12,150.0	1,322.0	4,962.0

Figure 4-1 Dollar Decision Costs for NDI with Type Classification

(In Thousands of FY 1995 CONSTANT Dollars)

As might be expected, Field Sanitation is the least expensive approach, followed closely by the construction of an Oxidation Pond. The collect and Haul Away Approach is clearly the most expensive. The Packaged Plant Approach is about $35 million cheaper than the Collect and Haul Approach but about $7 million more expensive than the Oxidation Pond.

conditions.

4.3.1.2 Sensitivity and Uncertainty Analyses

In the sensitivity analyses the values of the input parameters and assumptions were varied one at a time. These analyses indicated how sensitive the outputs are to changes in the inputs and highlighted the cost drivers. Then, in the uncertainty analysis, the values of an entire set of parameters were changed at one time. Figure 4-2 presents the results of the Uncertainty Analysis of the four alternatives in graphical form. The vertical lines show the range between the high and low estimates for each alternative. The horizontal tick marks indicate the basic estimates for each system.

The Collect and Haul Away Approach is the most expensive under all assumptions and Field Sanitation is the cheapest, followed by the Oxidation Pond. There is a small overlap among the costs of the approaches -- the lowest estimates for the Collect and Haul Away Approach are almost the same as the highest estimates for the Packaged Plant. Similarly, the lowest estimates for the Packaged Plant Approach are very close to the Highest estimates for the Oxidation Pond. These differences, in fact, are so small that they are within the margin of error of the estimates. Thus, even though it does not produce changes in the ranking of the approaches, the Uncertainty Analysis does underline the importance of considering a range of costs rather than a single estimate for each cost element. The Uncertainty Analysis also provides envelopes within which the actual system costs will probably be.

4.3.1.3 Decision Costs for Alternate Acquisition Strategies

Figure 4-3 summarizes the Decision Costs of the four approaches under the three acquisition strategies.

Changing the acquisition strategy to one leading to operational stocks would reduce the costs of all the approaches except for the Field Sanitation Approach. The reductions are principally in RDT&E Costs and result largely from less extensive testing requirements and the elimination of some acquisition documentation. However, the reductions are quite small -- less than 1% for both the Collect and Haul Away Approach and the Oxidation Pond and only 7.7% for the Packaged Plant Approach. These reductions are smaller than the margin of error of the estimates.

The total Decision Costs for a service contract shown in Figure 4-3, on the other hand, are considerably higher than the base case estimates for all four approaches. The service contract essentially eliminates both RDT&E Costs and Procurement Costs. However, the contractor would incur virtually the same procurement costs, since he would be required to furnish the equipment. In addition, the contractor's operating costs would be higher than those of the Army by the cost of money (interest) for the initial investment in equipment; the salaries of the drivers, treatment plant operators, construction equipment operators, and other personnel (military personnel costs were not included in the DCE); and allowances for risk and profit.

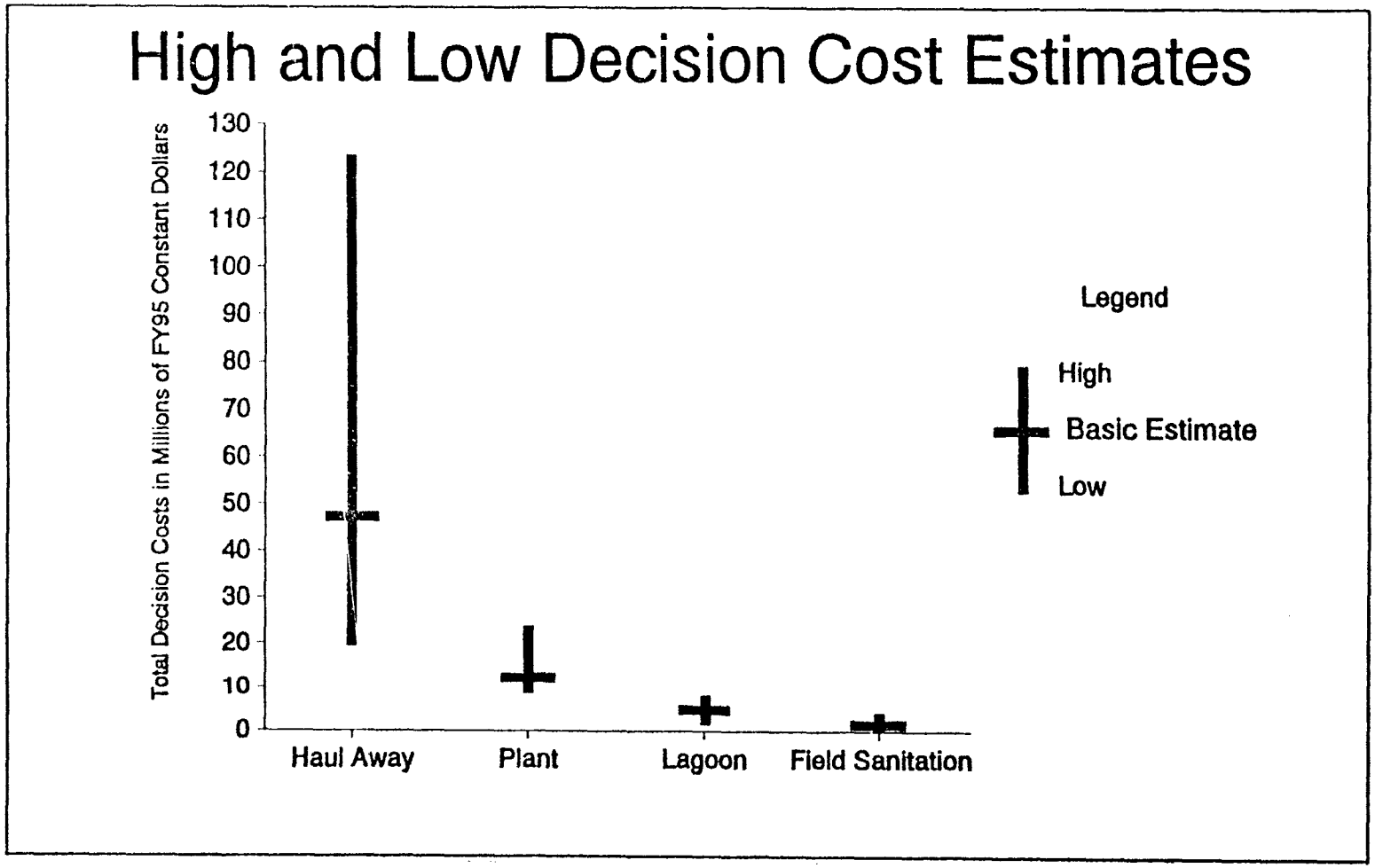

Figure 4-2 High and Low Decision Cost Estimates

	COLLECT AND HAUL AWAY	PACKAGED PLANT	FIELD SANITA-TION	OXIDATION POND
NDI WITH TYPE CLASSIFICATION (36 Deployments per Year)	47,610.0	12,150.0	1,322.0	4,962.0
OPERATIONAL STOCKS (36 Deployments per Year)	47,160.0	11,650.0	1,322.0	4,920.0
SERVICE CONTRACT (36 Deployments per Year)	51,140.0	14,650.0	17,520.0	16,930.0
SERVICE CONTRACT (1 Deployment per Year)	1,421.0	407.0	36.7	568.0

Figure 4-3 Decision Costs for Different Acquisition Strategies

(In Thousands of FY 1995 CONSTANT Dollars)

If, however, Force Provider is rarely deployed, the service contract could produce savings, since payment is largely for each deployment under such a contract. The contractor would probably try to keep his initial investment to a minimum unless required to do otherwise under the terms of the contract. As an example, the bottom row of Figure 4-3 shows the costs under a service contract if only one module were deployed for 90 days each year. Although this solution would save money, it would increase operational risk, since it is likely that the contractor would not be able to support all 36 modules at the same time.

4.3.2 Operational Analysis

4.3.2.1 Performance Criteria

As Figure 4-4 indicates, based on performance alone the Oxidation Pond is clearly the best choice, followed closely by the Packaged Plant.

4.3.2.2 Operational Criteria

The principal weakness of the Oxidation Pond is that in certain locations -- urban areas, for example -- it would not be possible to use this approach.

4.3.2.3 Schedule Criteria

With regard to schedule, Field Sanitation Methods or an Oxidation Pond are the preferred approaches, since either could be implemented almost immediately. both the Collect and Haul Approach and the Packaged Plant, on the other hand, require more time to select and procure the equipment.

4.3.3 Integration of Cost and Performance Criteria

Figure 4-5 plots cost versus performance for the four approaches and the three acquisition strategies. (The costs are those shown in Figure 4-3, and the Performance ratios are those in Figure 4-4.) The Oxidation Pond and the Packaged Plant have both good performance and low cost. The Field Sanitation approach has low cost, except when a service contract is used, but it also has very low performance. The Collect and Haul approach has high cost but relatively poor performance and is limited by deployment and support considerations. For each alternative approach, an acquisition strategy leading to Operational Stocks is slightly less expensive than the NDI acquisition strategy. The service contract is the most expensive strategy for all four approaches.

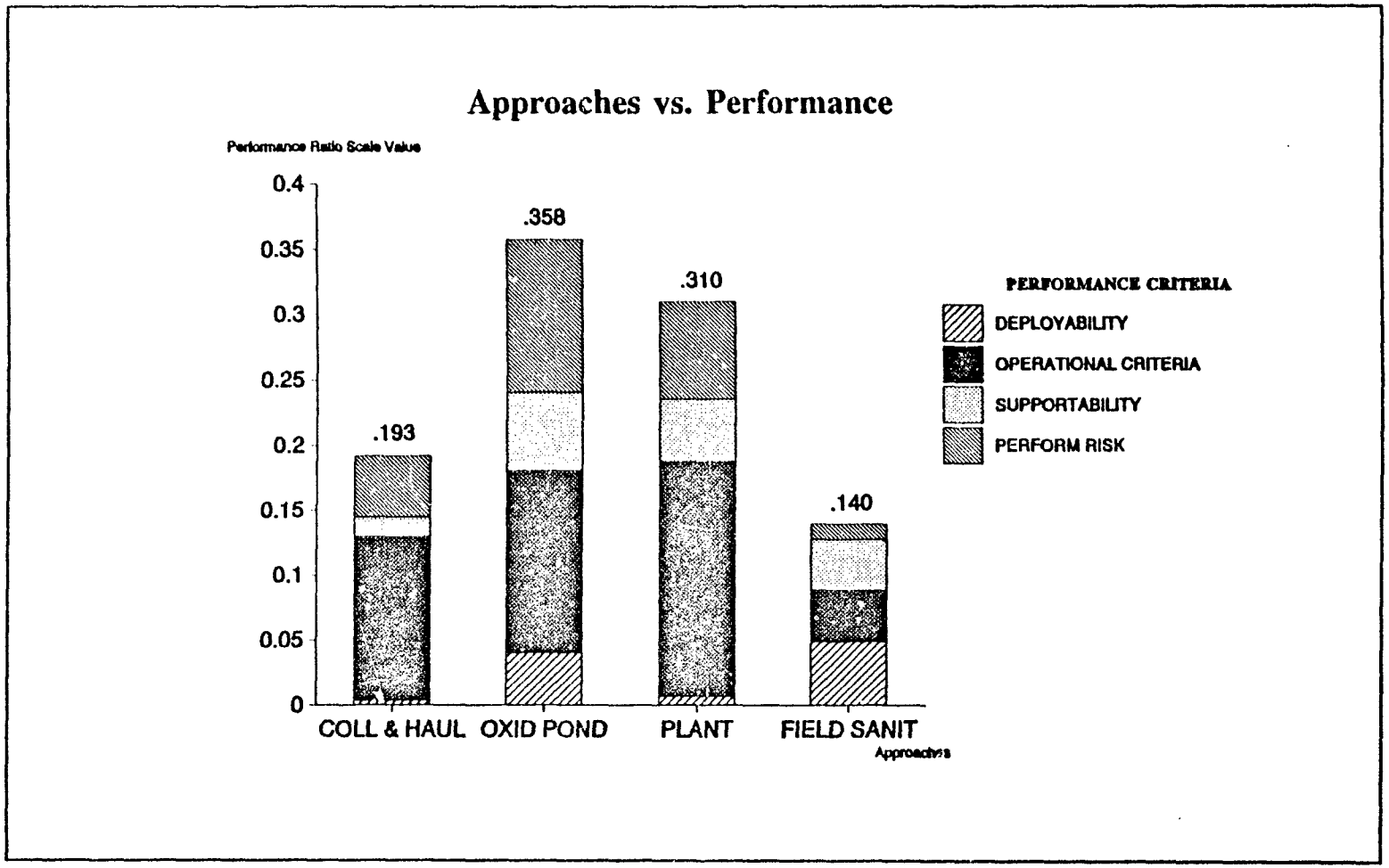

Figure 4-4 Comparison of Approaches Based on Performance

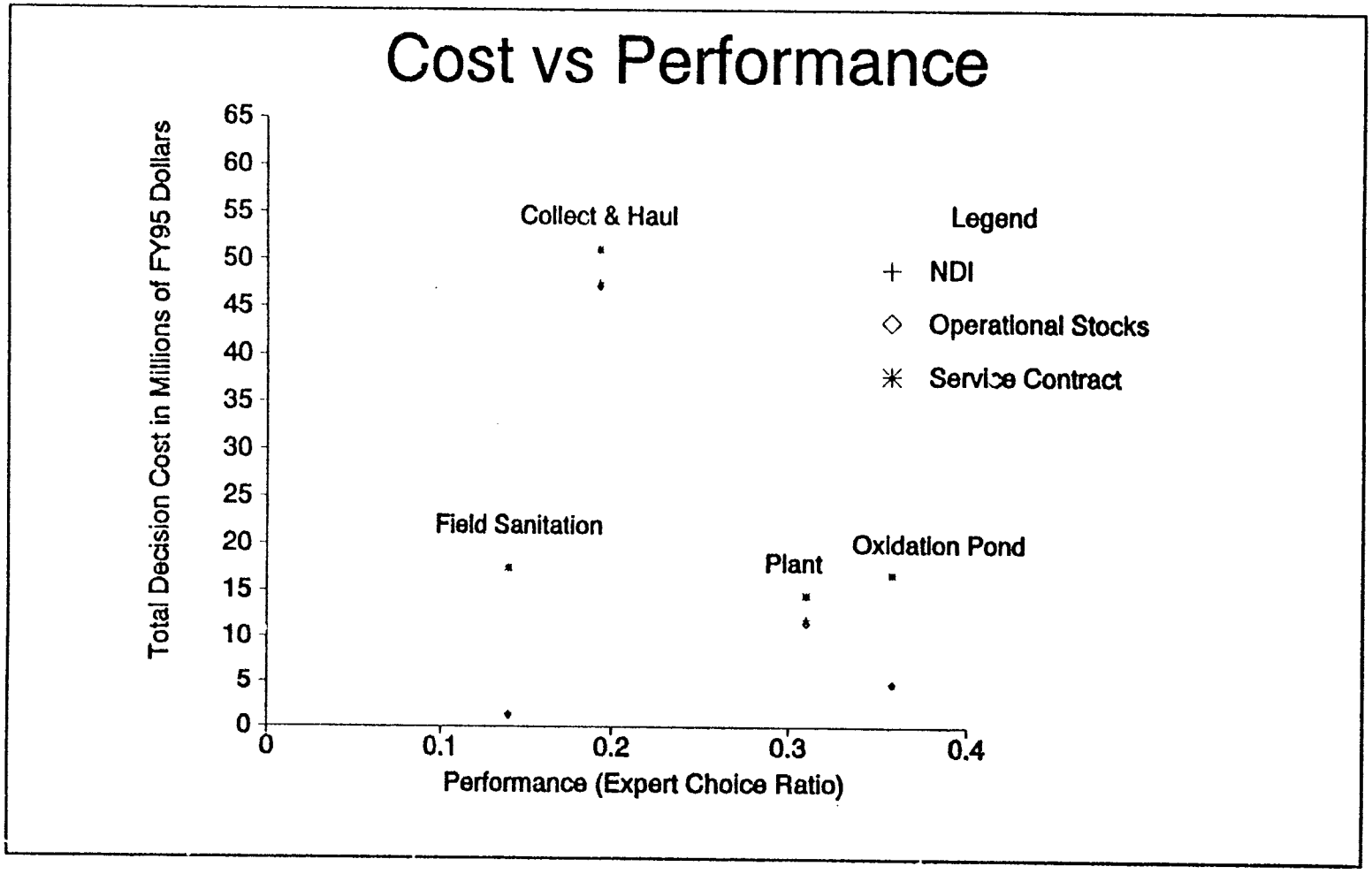

Figure 4-5 Cost versus Performance for All Approaches and Acquisition Strategies

4.4 DECISION CRITERIA

- COST: Field Sanitation is the cheapest approach. Its 20-year cost is $3.6 million less than the Oxidation Pond and $7 million less than a Packaged Plant.

- SCHEDULE: The Field Sanitation Approach and the Oxidation Pond can both be implemented almost immediately.

- PERFORMANCE: The Oxidation Pond has the best performance, followed by the Packaged Plant.

- OPERATIONS: The Packaged Plant is the only approach which can be used in virtually every situation.

- OVERALL: The Oxidation Pond offers the best performance at the least cost. When site conditions or local regulations do not permit its use, the Packaged Plant can meet the need at minimum extra cost.

4.5 RECOMMENDATIONS

- The Oxidation Pond should be adopted as the normal solution to the Wastewater Treatment Problem for Force Provider when host nation support is not available.

- The Oxidation Pond should be constructed by the supporting Army Engineer unit.

- To provide for those cases where an Oxidation Pond cannot be used, a Packaged Plant should be developed, type classified, and acquired. If six plants were purchased (one for each Force Provider Company) the total combined program cost for the Oxidation Ponds and Packaged Plants would be $9.1 million. This is only about $4 million more than the cost for the Oxidation Pond Approach alone and about $3 million less than using the Packaged Plant for all cases. This recommendation seeks to achieve a balance between cost and operational flexibility in the use of the Force Provider system.

APPENDIX A

OPERATIONAL REQUIREMENTS DOCUMENT FOR FORCE PROVIDER APPROVED 23 JUNE 1993

DEPARTMENT OF THE ARMY
HEADQUARTERS UNITED STATES ARMY TRAINING AND DOCTRINE COMMAND
FORT MONROE, VIRGINIA 23651-5000

FPMO

REPLY TO ATTENTION OF

30 JUL 1993

ATCD-SE (70-1i)

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Operational Requirements Document (ORD) for the Force Provider (FP)

1. The enclosed FP ORD was approved by HQ TRADOC 23 Jun 93. The following information is applicable to this document:

a. Acquisition Category: IV.

b. Materiel Developer: Army Materiel Command.

c. Combat Developer: TRADOC (U.S. Army Quartermaster School).

d. Trainer: TRADOC.

e. Logistician: U.S. Army Materiel Systems Analysis Activity.

f. Operational Tester: U.S. Army Operational Test and Evaluation Command.

g. CARDS reference number: 16042.

2. The HQ TRADOC POC is Mr. Roberts, ATCD-SE, DSN 680-3512.

FOR THE COMMANDER:

Bettie B. Gonser
BETTIE B. GONSER
Chief, Mail Management Branch

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ATCD-SE
SUBJECT: Operational Requirements Document (ORD) for the Force Provider (FP)

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DEPARTMENT OF THE ARMY
HEADQUARTERS UNITED STATES ARMY TRAINING AND DOCTRINE COMMAND
FORT MONROE, VIRGINIA 23651-5000

REPLY TO ATTENTION OF

23 JUN 1993

ATCD-SE (70-1f)

MEMORANDUM FOR Commander, U.S. Army Quartermaster Center and School, ATTN: ATSM-CDM, Fort Lee, VA 23801-5000

SUBJECT: Force Provider (FP) Operational Requirements Document (ORD)

1. The FP ORD is approved (Enclosure 1).

2. HQ TRADOC POC is Mr. Roberts, ATCD-SE, DSN 680-3512.

Encl

LARRY G. LEHOWICZ
Major General, GS
Deputy Chief of Staff for
Combat Developments

CF:
HQDA (DALO-TST/DAMO-FDL/DAMO-FDD)
CDR, USACASCOM (ATCL-MS/ATCL-CFS)
CDR, NRDEC (SATNC-UF)

OPERATIONAL REQUIREMENTS DOCUMENT (ORD)

FOR

FORCE PROVIDER (FP)

1. General Description of Operational Capability.

a. Overall Mission Area. The FP will provide a capability to give the front-line soldier a brief respite from the rigors of a combat theater. Additionally, it will provide a capability or may augment the capability of a task force to provide for theater of operations (TO) reception and reconstitution, humanitarian aid, and noncombatant evacuation operations (NEO) (disaster relief missions). The FP will reduce deficiencies in the areas of health, welfare, and morale of soldiers and will enhance the quality of life for soldiers in the field. Quality of life is linked directly to the functional areas of feeding, billeting, health, and hygiene services. To meet the primary mission need, the FP system must include tents; shelters; kitchens; showers, laundries, and latrines which can be contained in a standard package; potable water and power generation equipment; lights; climate control equipment; morale, welfare, and recreation (MWR) capabilities, including religious support; and other equipment to provide the capabilities listed in paragraph 4. A capability must be provided for moving containers within the FP site. Some requirements of the FP, such as waste disposal and waste water reutilization/disposal may not be available initially with current technology. A concurrent pre-planned product improvement (P3I) program will be initiated to allow for modernized equipment and upgrades to the FP as the technology becomes available.

b. Operational and Support Concepts.

(1) Operational. The FP is a system that will provide support for a force of 3,300 personnel. It will be designed in 550-soldier modules, with each module capable of independent operations. The FP will be assigned to a theater Army command or corps support command, with further attachment to an area support group (ASG), corps support group (CSG), supply and services battalion, or other appropriate headquarters. An FP cadre unit, augmented with military/ civilian personnel, will be the primary operator of the FP. Elements of the 550-soldier module of the FP could be employed as far forward as the division support area (DSA), depending on mission, enemy, troops, terrain, and time (METT-T). The full 3,300-soldier FP set would be employed as far forward as the corps area. It will be deployable on a geographical basis, consistent with climatic conditions. Deployment of the FP in regions with cold and/or extreme cold climatic conditions or in basic climatic conditions when temperatures fall below 32 degrees Fahrenheit (F), an insulating capability for all

facilities will be required. A P3I program will be initiated to permit operational capability in cold and extreme cold climatic conditions.

(2) Support. The FP will be supported by the standard Army logistics system (supply and maintenance) to the maximum extent possible. Exceptions to this requirement, especially in terms of requirements for P3I items, will be addressed on a case-by- case basis. It is desirable that the FP be repairable (all subsystems) at organizational and direct support (DS) and general support (GS) levels of maintenance. Also, it may require new military occupational specialties (MOSs) (i.e., waste water treatment specialist) or unique skills for operators and maintainers.

(a) Internal. Capabilities for strategic and tactical mobility will be design priorities. Containerized subsystems, unless otherwise specified, will consist of equipment permanently configured within Organization for International Standards (ISO)-compatible containers or will consist of equipment/tentage, etc., packed inside these ISO-compatible containers. These containerized subsystems, when used for their intended purpose (when equipment inside the container is operational), may be either expandable or non-expandable containers. All equipment required for assembly and support of the FP will be organic to the system or in an available support package and self-contained where feasible (includes material handling equipment (MHE), lights, power generation equipment, climate control equipment, command and control equipment, and other like items). Where applicable, use of military standard (MILSTD) environmental control units, MILSTD Tactical Quiet Generators, and Distribution, Illumination System Electrical, will be the desirable equipment for climate control, power generation and distribution, and lighting capabilities. Power generation personnel and equipment assets of the engineer battalion (prime power) will be employed when feasible. The concurrent, P3I program will ensure that all timelines for environmental requirement mandates are met. Critical repair parts will be identified and included within each component package.

(b) External. Support will be required from available engineer units for site preparation, set up, and recovery of the FP. Supply and maintenance support and transportation above the standard organizational level, as well as other required combat service support (CSS) functions, will be provided by CSS units assigned or attached to the supporting CSG or ASG. Support will be required for supply/resupply of class I, II, III, IV, VI, and IX supplies. Water treatment support will be provided by the doctrinal water support structure. Military police support also will be required for security purposes. The FP medical facility will be operated by a medical unit assigned to the appropriate medical group/brigade. This medical unit will provide all medical equipment and supplies necessary to support the FP. The

FP will provide the necessary climate control shelters, lighting, and utilities for the medical facility. Retail supplies and merchandise will be provided by the Army and Air Force Exchange Service).

c. Mission Need Statement Summary.

(1) The need for the FP resulted from Operation Desert Storm (ODS) support deficiencies. The Chief of Staff, Army stated that quality of life is a crucial element in improving overall combat readiness and that the Army could have done better during ODS in providing living/working conditions for soldiers.

(2) The FP will provide a stand-alone support capability. Currently, the CSS structure is capable of performing the FP mission only on an ad hoc, task force basis. Nonmateriel changes in current or programmed organizations or in tactics will not enable separate functional support elements of the current logistics system to perform the FP mission. Doctrine, training, and organizations will be affected by introduction of the FP; but changes in any one of these disciplines or in combinations of them will not meet the requirements. Equipment already in the Department of Defense (DOD) inventory will be prime candidates for inclusion in the FP, including the U.S. Air Force Harvest Bare/Eagle/Falcon family of systems, the U.S. Navy's Communications Zone Hospital, the Army's Deployable Medical System (DEPMEDS), and Third Army's Bare Base Life Support System. Quality-of-life equipment from allied nations also must be considered. Commercial industry already has the capability to produce the component items required for the FP, with numerous prototypes already in existence. In some cases, firms actually assemble components into base camps and operate them for industries such as logging and forest fire fighting. These nondevelopmental item solutions also will be considered.

(3) The system must be developed consistent with constraints centered on manpower and personnel integration domains, budget, logistics supportability, transportability, standardization, and interoperability.

2. Threat. The FP will not defeat a threat capability. The FP and associated personnel, both supporters and supported, are vulnerable to the spectrum of threat destruction/disruptive capabilities at all levels of conflict in the TO, from low through high intensity. Major threats to the FP would be a result of its proximity to targets in the division and corps areas. Though unlikely, the FP also may be attacked as a target of opportunity. Destructive capabilities such as direct and indirect fire, missile effects, small arms fire, and sabotage can damage the system and harm operators. Biological and chemical warfare

operations may render the system temporarily unusable due to contamination.

3. Shortcomings of Existing Systems. There is currently no system in the Army inventory that will adequately and efficiently provide the required level of soldier quality of life. This support mission is in addition to organic CSS unit missions to support divisional units and also in addition to current doctrinal support missions for CSS units in echelons above division. Equipment currently within the DOD could satisfy some of the requirements for the FP system. Other components required for the FP do not exist in the military inventory or do not meet the self-containment requirement.

4. Capabilities Required.

a. System Performance. The FP must:

(1) Have a modular capability to operate independently to support 550 soldiers or be complexed/combined up to a full capability to support a brigade-sized force of 3,300 personnel.

(2) Include, as a minimum, the following items to support soldiers: kitchens, showers, laundries, latrines, and billeting facilities.

(3) Have a water storage, distribution, and disposal capability to support a 550-person basic module and be capable of complexing/combining to provide this same support to 3,300 supported personnel. Treated (potable) water will be stored in potable water storage tanks; storage capacity for the 550-person module should be approximately 80,000 gallons. The water distribution system will consist of pumps, couplings, hose line (flexible, semi-rigid, or rigid), valves, and storage tanks. Waste water that cannot be treated will be disposed of through an environmentally safe method. Water reuse/conservation will be a desired capability for all FP subsystems that use water.

(4) Have all provisions to facilitate mission accomplishment, including lighting; climate control; power generation and distribution; fuel storage and distribution; other utilities; fire extinguishing; and all system management, supply, and maintenance work facilities for FP operations only. A capability must be included for moving containers within the FP site.

(5) Have a kitchen capability to prepare and serve 3 cook-prepared meals daily for up to the maximum supported personnel capacity of the 550-person module and also up to 3,300 personnel when the complete FP package is deployed. The kitchen must have the capability to perform roasting, grilling, frying, baking, and boiling tasks. Microwave operations are desired.

(6) Have a capability to provide billeting in climate controlled tents with an operational range of 60-90 degrees F for the maximum supported capacity, both for the 550-personnel module and the full 3,300 personnel package.

(7) Have a climate control (heating, air conditioning, ventilation) capability with an operational range of 60-90 degrees F for all support and work facilities.

(8) Have integrated lighting and utility capabilities in all support and work facilities and integrated lighting in billeting facilities.

(9) Have a shower system with a capability to provide shower support on the basis of 1 shower per soldier per day to support the basic 550-person module and be able to support 3,300 personnel when the complete FP package is deployed. The system must be capable of quick set up and tear down (equal to or less than the times required for currently fielded shower systems) and must be sufficiently mobile and rugged to operate in forward areas of the battlefield. If the system is comprised of containerized components, they must be able to complex/combine with the climate controlled tents. Operation of the system must not have an adverse impact on the environment. A containerized system is desirable.

(10) Have a laundry system with a capability to provide laundry support for the basic 550-person module. Soldiers will turn in up to 15 pounds of laundry during each unit occupancy of the FP (minimum of 3 days). This subsystem must have the capability to clean personal clothing and load-carrying equipment. Laundry will be washed and returned to the soldier within 24 hours of turn in. This laundry subsystem must have the capability to complex/combine to support up to 3,300 supported personnel. A containerized system is desirable. If this subsystem is containerized, the components must be able to complex/combine with the climate controlled tents. A self-service laundry capability would be a desirable supplement.

(11) Have a latrine capability to provide support for the basic 550-person module. This capability must have a proper venting system to remove waste by-products; and it must be equipped with or supported by a proper, environmentally sound, waste storage, disposal, filtration, and/or treatment method. The latrine subsystem must be capable of complexing/combining to support up to 3,300 supported personnel. A containerized system is desirable.

(12) Have a capability to provide facility space for basic MWR services to support a 550-person module, with a capability to complex/combine to support 3,300 personnel. These

services include, but are not necessarily limited to, religious support, finance, and medical care facilities; mail handling; telephones; recreational facilities (includes television and video machines, sports/fitness facilities and equipment, etc.); health and comfort packs; and retail merchandising facilities.

(13) Be capable of operations in temperature, solar radiation, and humidity conditions of hot and basic climatic design types of Army Regulation (AR) 70-38 in temperatures from +32 to 120 degrees F.

(14) Be resource efficient in terms of manpower, energy, fuel, and water; self-contained to the maximum extent possible in terms of individual subsystems; and multifuel capable.

(15) Have containers/equipment capable of being stored in contingency stocks, requiring minimal inspection and maintenance. They also must be capable of being moved from storage and deployed with no additional packaging or preparation. When in shipping configurations containers must have external dimensions no greater than 8'x8'x20'. The ISO-compatible containers must meet all ISO structural and handling requirements for international shipping, including stacking requirements.

b. Logistics and Readiness. The FP will be supported by the standard Army logistics system (supply and maintenance) to the maximum extent possible. Exceptions to this requirement, especially in terms of requirements for P3I items, will be addressed on a case-by-case basis. It must be repairable (all subsystems) at the operator/crew, organizational, DS/GS, and depot-level maintenance. The near term subsystems should require no additional skills or manpower to operate or maintain than those already taught for their respective areas of responsibility. Quantitative reliability, availability, and maintainability (RAM) requirements for the overall FP system are not appropriate.

(1) The FP subsystems in their shipping configurations will be capable of transport by highway, air, rail, and marine modes.

(a) Air transport of the FP will include C-130, C-141, C-5, and C-17 aircraft.

(b) Marine transport assets will include the Lighter, Air Cushioned Vehicle-30 (LACV-30) and larger vessels.

(c) Rail transport is required.

(d) Highway transport and limited cross country transport is required by five-ton truck and tractor, semitrailer,

Palletized Load System, self-loading trailers, or mobilizer systems.

(2) All subsystems and support equipment systems requiring the use of fuel will be required to operate using the predominant battlefield fuels (JP-8, DF2).

(3) New system-specific test, measurement, and diagnostic equipment (TMDE) generally will not be required. Exceptions to requirements for no system specific TMDE will be made on a case by case basis for P3I items only.

(4) The FP will be designed to maximize ease of maintenance and minimize the number of personnel, materiel, parts, and time required. Operator and organizational maintenance tasks will be designed so they can be performed by soldiers or civilian personnel with the same skills and abilities prescribed for similar equipment/systems.

c. Critical System Characteristics. Contamination survivability will be a desirable capability. It also will be desirable that system components, with the exception of tents, be designed to be decontaminated to negligible risk levels as outlined in AR 70-71, U.S. Army Training and Doctrine Command (TRADOC) Regulation 71-14, and Department of the Army (DA)-approved nuclear, biological and chemical (NBC) contamination survivability criteria for Army materiel. All P3I equipment must meet the contamination survivability and decontamination standards required in the publications identified in this paragraph.

5. Integrated Logistics Support (ILS).

a. Maintenance Planning. The system must be supported by the standard Army maintenance system to the maximum extent possible. Exceptions to this requirement, especially in terms of requirements for P3I items, will be addressed on a case-by-case basis. All equipment/subsystems must be repairable at the operator/crew, organizational, DS/GS, and depot levels. The system must not require new MOSs or additional skill identifiers for operation or maintenance, nor shall it require any new/special tools or system-specific TMDE. The system and all equipment/subsystems must be covered by DA technical manuals for operation, maintenance, and repair parts. Operator manuals will be packed with each end item delivered.

b. Support Equipment. All system support equipment, power generation, climate control, lighting, and other utilities will be organic to the FP or in an available support package. Internal site movements equipment also will be required. Built-in test equipment should be used wherever possible on power generation, lighting, utility equipment, and basic subsystems to

isolate faults. The FP will be upgraded with modernized equipment as it becomes available. The ILS plan will provide details on how support will be accomplished.

c. Human Systems Integration.

(1) Training. System design will minimize Army training cost, time, and associated resources. The actual Army training program for the FP will be determined using the system approach to training process.

(a) The introduction of the FP will require both institutional and unit training. Training will provide individual skills necessary for efficient employment of the FP. The materiel developer and proponent school jointly will determine requirements for instructor/key personnel training, new equipment training team, and/or new material introductory briefing team.

(b) All training support manuals, training literature, and other training products (to include critical task list for operators and maintainers, programs of instruction, and lesson plans) will be developed concurrently and delivered in draft prior to operational testing and fielding. Institutional training for operators and maintainers of individual component items of the FP will be modified as needed to support the FP. Unit training for operators and maintainers will be conducted with the training products and will be modified as needed to support the FP. There will be no institutional training for collective tasks involving multiple components of the FP. No training devices or embedded training capability will be required.

(2) Manpower and Personnel. The operators of the primary support facilities in the FP will be in MOSs 94B, 57E, and 77W. Related MOSs for support and maintenance functions include, but are not limited to, 621A, 21A, 43M, 44B, 51B, 51H, 51K, 51R, 51T, 52C, 52D, 52E, 54B, 62B, 62E, 62J, 62N, 63B, 63J, 75B, 77F, 88M, 92A, and 92Y. Any civilian augmentation will require personnel with commensurate skills required for the MOSs listed in this paragraph.

(3) Human Factors Engineering (HFE).

(a) Operators and maintainers must be capable of safely and effectively operating and maintaining the FP while wearing the field duty uniform or the cold weather ensemble. The FP will meet applicable industry and government HFE requirements.

(b) The total system, and all components thereof, shall conform to MILSTD-1472D (Human Engineering Design Criteria for

Military Systems, Equipment, and Facilities) to ensure that human and total system performance are optimized for the target audience description (military operators, maintainers, and support personnel) or equivalent civilian personnel.

(4) System Safety/Health Hazard Assessment. The FP will comply with industry and government safety and health hazard standards.

(a) A system safety program will be developed in accordance with AR 385-16 and MILSTD 882B to ensure the FP, as a total system, and all subsystems will be safe during storage, transportation, maintenance, operation, and disposal. As a minimum, the FP will:

(1) Present no uncontrolled hazards to operators or damage to government equipment. Hazards specified in categories IA, IB, IC, ID, IIA, IIC, and IIIA of appendix A of MILSTD 8982B are unacceptable and will be eliminated. Whenever feasible, fail-safe design will be used for critical safety/health functional components or subsystems.

(2) Comply with applicable safety and health requirements of MILSTD 1472, steady-state noise levels of MILSTD 1474, and electric grounding requirements of MILSTD 454.

(3) Comply with health program requirements of AR 40-10 to ensure health hazards are identified, evaluated, and either eliminated or reduced to acceptable levels.

(b) Other specific safety concerns include fire protection; stability of facilities; personnel access and egress for operators, maintainers, and supported personnel; traffic patterns for operators; and wet floor hazards.

d. Computer Resources. No computer resources are required for operation of any of the subsystems. However, the FP must have a capability to interface with logistics Standard Army Management Information Systems, including the Unit-Level Logistics System (ULLS), Standard Army Maintenance System, and Standard Army Retail Supply System for internal FP supply and maintenance operations only. An ULLS computer will be included with the FP.

e. Other Logistics Considerations. There may be requirements for unique facilities or shelters, special packaging, handling, and transportation considerations, or unique data requirements. The provisioning strategy for the FP is to be determined. A concurrent P3I program will be developed for modernized equipment.

6. Infrastructure Support and Interoperability.

a. Command, Control, Communications, and Intelligence (C3I). The FP will require integration into the C3I architecture.

b. Transportation and Basing. The FP will be capable of being based worldwide (consistent with climatic conditions specified in this document). The FP subsystems must be in ISO containers/shelters or ISO-compatible containers in their shipping configuration, capable of meeting all requirements for intermodal and international shipping. The FP will be capable of all transportation capabilities identified in paragraph 4 of this document.

c. Standardization, Interoperability, and Commonality. The FP will be capable of operating with all United States, North Atlantic Treaty Organization, and other allied nations at the time it is fielded. The FP will use the predominant battlefield fuels (JP-8, DF2) and will have standardized/common (120/240V, 50/60HZ) electrical requirements throughout. Design of the FP subsystems shall consider maximum efficiencies for fuel and electricity usage. A desirable characteristic is that FP will be capable of using host nation utilities, including power, water, sewer, etc. The U.S. Army Medical Department has a requirement in hospital units for a water supply, storage, treatment, distribution, and disposal capability similar to the FP.

d. Mapping, Charting, and Geodesy Support. Standardization with Defense Mapping Agency products is desired.

e. Environmental Support. The FP will be capable of operations in climatic conditions hot and basic in temperatures from +32 to 120 degrees F. It will be deployable on a geographical basis, consistent with the climatic conditions requirement. Deployment of the FP in regions with cold and/or extreme cold climatic conditions or in basic climatic conditions when temperatures fall below 32 degrees F requires an insulating capability. No requirement will exist for any weather, oceanographic, or astrogeophysical support.

7. Force Structure. The FP will be fielded in six brigade-sized support packages (support 3,300 personnel per package).

8. Schedule Considerations.

a. Initial operational capability (IOC) will be attained when the following actions are completed/achieved by the first unit equipped (FUE) with the system:

(1) All primary and supporting equipment and all manuals, training literature, and related publications are received.

(2) All applicable personnel, including the operators and maintainers, are certified as trained with the respective subsystems. The FUE can successfully perform all operational missions prescribed in the applicable mission training plan.

b. To provide this critical capability to U.S. forces, a fiscal year (FY) 96 IOC is required, with initial procurement of FP subsystems in FY 95. Failure to achieve this IOC will prevent adequate support for rapid deployment and contingency forces during deployment windows. Failure to achieve the IOC date also will adversely impact on significant enhancement of soldier quality of life in the field.

c. Full operational capability will be achieved when all six brigade-sized support packages meet the standards outlined in paragraph 8.a. for IOC.

ANNEX A

RATIONALE

The following rationale corresponds to subparagraphs of paragraph 4, Capabilities Required:

a. System Performance. The FP must:

(1) Have a modular capability to operate independently to support 550 soldiers or be complexed/combined up to a full capability to support a brigade-sized force of 3,300 personnel.

Rationale. The baseline mission for the FP is to provide rest and refit (R&R) for front line soldiers in combat/conflict, METT-T dependent. The lowest level assignment of the FP will be the corps, with the intent to support two levels down (brigade). The brigade-sized force is approximately 3,300 personnel. Support by the FP system is envisioned as far forward as the DSA for as many as six front line battalion task force-sized units concurrently.

(2) Include, as a minimum, the following items to support soldiers: kitchens, showers, laundries, latrines, and billeting facilities.

Rationale. The FP is designed to provide the soldier with a substantial improvement in quality of life in the field, especially for the front line soldier who needs a brief respite from the rigors of duty in forward areas of the combat zone. The support provided by the FP is designed to address the areas of health, welfare, and morale of soldiers, linked directly to the primary areas of feeding, showering, and laundering, as well as to the ancillary areas of sleep, rest, and relaxation. This capability will alleviate the need to perform the numerous FP-type missions only on an ad hoc, task force basis.

(3) Have a water storage, distribution, and disposal capability to support a 550-person basic module and be capable of complexing/combining to provide this same support to 3,300 supported personnel. Treated (potable) water will be stored in potable water storage tanks; storage capacity for the 550-person module should be approximately 80,000 gallons. The water distribution system will consist of pumps, couplings, hose line (flexible, semi-rigid, or rigid), valves, and storage tanks. Waste water that cannot be treated will be disposed of through an environmentally safe method. Water reuse/conservation will be a desired capability for all FP subsystems that use water.

Rationale. Potable water is required for the kitchen and feeding operations, personnel and feeding equipment sanitation, and

shower operations. All capability to store and distribute potable water must be organic to allow for the independent operations required of the 550-person support module. This capability reduces day-to-day dependency on external water support units. Environmentally safe waste water disposal is required in accordance with all state, federal, and international environmental laws. Water reuse/conservation reduces the logistical burden of external support units.

(4) Have all provisions to facilitate mission accomplishment, including lighting; climate control; power generation and distribution; fuel storage and distribution; other utilities; fire extinguishing; and all system management, supply, and maintenance work facilities for FP operations only. A capability must be included for moving containers within the FP site.

Rationale. The FP must be capable of providing all infrastructure support required to provide adequate and efficient support for the required number of personnel. The required capabilities in this requirement will allow the FP to operate 24 hours a day in the prescribed climatic conditions. System management, supply, and maintenance work facilities are needed to conduct normal unit functions within the FP and not provide these types of services for supported units/organizations.

(5) Have a kitchen capability to prepare and serve 3 cook-prepared meals daily for up to the maximum supported personnel capacity of the 550-person module and also up to 3,300 personnel when the complete FP package is deployed. The kitchen must have the capability to perform roasting, grilling, frying, baking, and boiling tasks. Microwave operations are desired.

Rationale. The kitchen system supporting the FP must be capable of performing all the food preparation operations required of equipment currently in use at the battalion level since the basic module of the FP is intended to support a battalion or battalion task force-sized unit. This kitchen capability must be capable of supporting the maximum personnel capacity of an independently operated 550-person module. It must be capable of providing the same level of support to the maximum capacity of the 3,300-person system.

(6) Have a capability to provide billeting in climate controlled tents with an operational range of 60-90 degrees F for the maximum supported capacity, both for the 550-person module and the full 3,300-person package.

Rationale. The FP missions include R&R, theater reception, convoy staging area support, reconstitution operations, NEO, disaster relief operations, and humanitarian aid operations.

All missions require billeting of personnel. Modern, climate controlled tents provide improved quality of life for billeting multiple personnel and for various work facilities, which is consistent with the FP mission philosophy. The 60-90 degrees F operational range helps accomplish standardization goals in that this is the same range for the climate control systems for the DEPMEDS and other shelter systems.

(7) Have a climate control (heating, air conditioning, ventilation) capability with an operational range of 60-90 degrees F for all support and work facilities.

Rationale. A major thrust of the FP is to provide improved quality of life for the soldier in the field. To provide as great a quality of life for the R&R mission for front line soldiers, facilities they use while at the FP should provide as much comfort as possible in the design. Climate controlled work facilities allow the FP to provide proper support in the required climatic conditions. The 60-90 degrees F operational range is the same range for the climate control systems for the DEPMEDS and other shelter systems.

(8) Have integrated lighting and utility capabilities in all support and work facilities and integrated lighting in billeting facilities.

Rationale. These lighting and utility requirements are necessary to provide proper living and working conditions on a regular basis. The requirement for lighting and utilities to be integrated into FP subsystems will eliminate the need for additional light sets and external utility equipment.

(9) Have a shower system with a capability to provide shower support on the basis of 1 shower per soldier per day to support the basic 550-person module and be able to support 3,300 personnel when the complete FP package is deployed. The system must be capable of quick set up and take down (equal to or less than the times required for currently fielded shower systems) and be sufficiently mobile and rugged to operate in forward areas of the battlefield. If the system is comprised of containerized components, they must be able to complex/combine with the climate controlled tents. Operation of the system must not have adverse impact on the environment. A containerized system is desirable.

Rationale. The shower subsystem, along with the rest of the FP, will have to be capable of operations in the DSA, METT-T dependent. Each individual 550-person module must be capable of independent operations. Therefore, the basic requirement for the shower system must be that it be capable of supporting the maximum capacity of the base FP module. The requirement for the complete capability

is to support 3,300 personnel because the FP as a system must provide support for that same number of personnel. Supported personnel must have sanitary conditions, thus requiring some shelter. The most appropriate shelter for this purpose is a tent. The climate controlled tent provides a clean, comfortable environment for this purpose. By complexing/combining the tent with the shower system, soldiers are not exposed to inclement weather prior to dressing. A water recovery capability is consistent with the requirement for the entire system to have the capability to purify water for potential reuse and to treat water for environmentally safe disposal.

(10) Have a laundry system with a capability to provide laundry support for the basic 550-person module. Soldiers will turn in up to 15 pounds of laundry during each unit occupancy of the FP (minimum of 3 days). This subsystem must have the capability to clean personal clothing and load-carrying equipment. Laundry will be washed and returned to the soldier within 24 hours of turn in. This laundry subsystem must have the capability to complex/combine to support up to 3,300 supported personnel. A containerized system is desirable. If this subsystem is containerized, the components must be able to complex/combine with the climate controlled tents. A self-service laundry capability would be a desirable supplement.

Rationale. The laundry subsystem, and the rest of the FP, will have to be capable of operations in the DSA, METT-T dependent. Each individual, 550-soldier module must be capable of independent operations. The laundry subsystem must be capable of supporting the maximum capacity of the base FP module. The requirement for the capability to support 3,300 personnel is based on the FP as a system; the laundry subsystem must provide support for that same number of personnel. The requirement for soldiers to be able to turn in 15 pounds of laundry each stay of a minimum of 3 days is designed to accommodate soldiers for the projected number of days a unit or task force could be expected to be supported by the FP for R&R purposes. Supported personnel must have a place to turn in dirty clothing and individual equipment (CIE) and to pick up the clean CIE, thus requiring some shelter. The most appropriate shelter for this purpose is a tent. The climate controlled tent provides a clean, comfortable environment for this purpose. By complexing/combining the tent with the functional laundry and clothing repair system, the operators have a capability to properly manage and account for the CIE turned in and picked up. The self-service laundry capability would provide a capability for each soldier to wash their own laundry. This would reduce or eliminate the requirement for laundry specialists.

(11) Have a latrine capability to provide support for the basic 550-person module. This capability must have a proper venting system to remove waste by-products; and it must be

equipped with or supported by a proper, environmentally sound waste storage, disposal, filtration, and/or treatment method. The latrine subsystem must be capable of complexing/combining to support up to 3,300 supported personnel. A containerized system is desirable.

Rationale. The latrine subsystem, and the rest of the FP, will have to be capable of operations in the DSA, METT-T dependent. The basic requirement for the latrine system must be that it be capable of supporting the maximum capacity of the base FP module. The requirement for the complete capability to support the 3,300 personnel is based on the FP as a system; the latrine subsystem must provide support for that same number of personnel. A venting system is required to provide a safe and healthy environment for soldiers using the subsystem of the FP, to prevent a buildup of any noxious gases/fumes. A waste disposal filtration system is required for the FP to provide environmentally safe operations. Waste water flushed from the latrine must be treated to allow for environmentally safe disposal.

(12) Have a capability to provide facility space for basic MWR services to support a 550-person module, with a capability to complex/combine to support 3,300 personnel. These services include, but are not limited to, religious support, finance, and medical care facilities; mail handling, telephones, recreational facilities (includes television and video machines, sports/fitness facilities and equipment, etc.), health and comfort packs; and retail merchandising facilities.

Rationale. A prime goal of the FP is to provide an improved quality of life for the soldier in the field. To support the R&R mission, basic MWR facilities will contribute to soldiers getting a brief respite from the rigors of front line duty. Employment of any or all of these facilities will be as dependent on METT-T (and possibly other factors) as the complete system or any module of the system. This subsystem must be capable of supporting the independent operations of the 550-person module as well as the full support capability for the 3,300-person package. The FP medical facility will be operated by a medical unit assigned to the appropriate medical group/brigade. This medical unit will provide all medical equipment and supplies necessary to support the FP. The FP will provide the necessary climate controlled shelters, lighting, and utilities for the medical facility.

(13) Be capable of operations in temperature, solar radiation, and humidity conditions of hot and basic climatic design types of AR 70-38 in temperatures from +32 to 120 degrees F.

Rationale. The FP will be deployed worldwide under all climatic conditions.

(14) Be resource efficient in terms of manpower, energy, fuel, and water; self-contained to the maximum extent possible, in terms of individual subsystems; and multifuel capable.

Rationale. Resource efficiency is required to reduce manpower and logistic requirements. A self-contained system will enhance deployability and mobility. Multi-fuel capability provides for increased supportability worldwide.

(15) Have containers/equipment capable of being stored in contingency stocks, requiring minimal inspection and maintenance. They also must be capable of being moved from storage and deployed with no additional packaging or preparation. When in shipping configuration, containers must have external dimensions no greater than 8'x8'x20'. The ISO-compatible containers must meet all ISO structural and handling requirements for international shipping, including stacking requirements.

Rationale. Containers/equipment must meet required storage and shipping criteria to ensure capability to rapidly deploy modules/packages. Rationale. Standardized containers will permit transportation of the FP without special handling or movement requirements.

b. Logistics and Readiness. The FP will be supported by the standard Army logistics system (supply and maintenance) to the maximum extent possible. Exceptions to this requirement, especially in terms of requirements for P3I items, will be addressed on a case-by-case basis. It must be repairable (all subsystems) at the operator/crew, organizational, DS/GS, and depot-level maintenance. The near-term subsystems should require no additional skills or manpower to operate or maintain than those already taught for their respective areas of responsibility. Quantitative RAM requirements for the overall FP system are not appropriate.

Rationale. This requirement will avoid (as much as possible) changes of the logistics system to accommodate the FP and will ensure that a supportable system is fielded. This requirement also will avoid any changes to personnel support requirements

(1) The FP subsystems in their shipping configurations will be capable of transport by highway, air, rail, and marine modes.

(a) Air transport of the FP will include C-130, C-141, C-5, and C-17 aircraft.

(b) Marine transport assets will include the LACV-30 and larger vessels.

(c) Rail transport is required worldwide.

(d) Highway transport and limited cross-country transport is required by five-ton truck and tractor, semitrailer, Palletized Load System, self-loading trailers, or mobilizer systems.

Rationale. Strategic and tactical mobility are critical design factors. The FP will be required to deploy to locations and situations across the TO. It must be capable of meeting the same transportability requirements of supported units. Flexibility in deployment ensures its capability to support conventional and highly mobile forces conducting operations.

(2) All subsystems and support equipment systems requiring the use of fuel will be required to operate using the predominant battlefield fuels (JP-8, DF2).

Rationale. This requirement will ensure objectives for standardization of fuel, specified in DOD 4140.43, Mar 88, Fuel Standardization, can be realized. Also, systems incapable of using the predominant battlefield fuel in the operational area will pose an unacceptable burden on the logistics supply system. This also could render the system, or any of its subsystems, nonoperational.

(3) New, system-specific, TMDE generally will not be required. Exceptions to requirements for no-system-specific TMDE will be made on a case-by-case basis for P3I items only.

Rationale. This requirement will avoid (as much as possible) changes to the logistics system to accommodate the FP and will ensure that a supportable system is fielded. Possible inclusion of a component such as a waste water treatment plant may require system specific TMDE due to the highly specialized nature of such equipment.

(4) The FP will be designed to maximize ease of maintenance and minimize the number of personnel, materiel, parts and time required. Operator and organizational maintenance tasks will be designed so they can be performed by soldiers or civilian personnel with the same skills and abilities prescribed for similar equipment/systems.

Rationale. Simplified maintenance and service requirements for the FP will serve to minimize operation and support life cycle costs for the system. The requirement to use soldiers or civilians with current skills minimizes or eliminates any impact on personnel and/or training systems.

c. Critical System Characteristics. Contamination survivability will be a desirable capability. It also will be desirable

that system components, with the exception of tents, be designed to be decontaminated to negligible risk levels as outlined in AR 70-71, U.S. Army TRADOC Regulation 71-14, and DA-approved NBC contamination survivability criteria for Army materiel. All P3I equipment must meet the contamination survivability and decontamination standards required in the publications identified in this paragraph.

Rationale. The FP is a system intended for multiple uses across the TO. There is no intent to employ the FP in conditions that would expose the system to the possibility of being a target for contamination. Use of components that are capable of contamination survivability would be considered a positive measure as long as mission capability is not degraded. Some of the initial equipment items to be included in the FP may not have been required to meet these criteria when they were developed. All P3I components should meet the contamination survivability criteria as those items are still to be developed or may be currently under development and required to meet these standards.

ANNEX B

OPERATIONAL MODE SUMMARY (OMS)/MISSION PROFILE (MP)

1. Wartime.

a. OMS. The FP will provide for units of up to 3,300 personnel to receive rest and some relief from stress. The FP will be based on a modular concept so it is expansible, transportable, and easily stored. It will have the capability of operating independently from 6 separate locations, each supporting up to 550 personnel. It is designed to address the areas of health, welfare, and morale of soldiers and is linked directly to the primary areas of feeding, showering, and laundry support, as well as to the ancillary areas of sleep, rest, and relaxation. It will provide the soldier with a substantial improvement in quality of life. During the initial deployment into an undeveloped theater, the FP could be used to support staging operations at port or vehicle rest stops along main supply routes as units deploy forward. It also will be used to provide front line soldiers with a brief respite from the rigors of duty in forward areas. It also offers considerable utility during reconstitution efforts and redeployment staging, and,if needed, for NEO or prisoner of war (POW) operations. Employment methods/missions and the percentage of time anticipated for each are shown below:

Employment/Mission	Percentage of Time
R&R	45
Theater Reception/Staging	20
Redeployment Staging	10
Convoy Support	10
Reconstitution	10
NEO/POW	5

The frequency of displacement is primarily dependent on METT-T factors, especially in the forward areas, and the field commanders' mission/operational requirements.

b. MP. The MP for equipment is essentially the same for each of the employment methods/missions--the prime difference being the length of time involved and the size of the force being supported. The length of time involved for each mission will vary depending on METT-T factors and field commanders' operational requirements. The average time per FP mission can range from three days for the R&R missions to some number of weeks or months for some of the more stable missions/methods of employment.

2. Peacetime.

a. OMS. The OMS for peacetime is linked to four types of missions. These missions are peacetime contingency missions in support of some low intensity conflict (LIC) scenarios, humanitarian aid, disaster relief, and governmental interagency support. The LIC scenarios will center on peacetime competition support missions. The humanitarian aid and disaster relief missions will include medical, construction, and food support as well as missions to provide support to areas struck by hurricanes, tornados, chemical spills, floods, etc. Interagency support would include riot control, drug interdiction, and immigration support missions. The design characteristics of the FP for wartime missions make it perfectly suitable for these peacetime mission and the general operating procedures would be the same for both wartime and peacetime. Employment methods/missions and the percentage of time anticipated for each are shown below:

Employment/Mission	Percentage of Time
Nation Building/Foreign Internal Defense Support	30
Interagency Support	25
Training	20
Disaster Relief	15
Humanitarian Aid	10

The frequency of displacement is primarily dependent on specific demands/operational requirements for each mission.

b. MP. The MP for equipment is essentially the same for each of the employment methods/missions--the prime difference being the length of time involved and the size of the personnel being supported. The length of time involved for each mission will vary according to the specific requirements for each mission supported. The average time for each mission would be extremely difficult to determine. It may be a number of weeks or even months.

3. Environmental Conditions. The environmental conditions for both wartime and peacetime are:

Climatic Design Type	Percentage of Time
Hot	25
Basic	75

4. Displacement. The displacement for either wartime and peacetime is extremely difficult to determine due to the different factors influencing a displacement and the multitude of missions

for which the FP can be used. However, based on the complexity required of the system to provide the range of health, welfare, and moral support described in the ORD, the FP could reasonably expect to be set up most often near established roadways or main supply routes. The expected operational terrain used for overland transport and the anticipated percentage of time for each are shown below:

Operational Terrain	Percentage Use
Primary Roads	25
Secondary Roads	65
Cross Country	10

ANNEX C

COORDINATION

The FP ORD was staffed worldwide. Comments from interested parties were received in writing and also provided during the joint working group (JWG). Comments were either accepted or not accepted. Rationale was provided for comments not accepted. In certain cases, some comments submitted in writing were overcome by the results of the JWG. In those cases, the comments have not been included in the count.

ACTIVITY	COMMENTS	ACCEPTED	NOT ACCEPTED
HQDA ODCSOPS	2	2	0
HQDA ODCSLOG	11	10	1
USAATCOM	1	1	0
FORSCOM 12	11	1	
USACASCOM	1	1	0
USACAC	7	7	0
USATAPC	1	1	0
USANCA	1	0	1
MTMC	8	8	0
USANGB	4	4	0
USATACOM	2	1	1
USATEC	2	2	0
USAHSC	4	4	0
USAOEC	6	5	1
USATEXCOM	7	7	0
TSM-SOLDIER	2	2	0
USABRDEC	25	23	2
USANRDEC	48	43	5
USAQMC&S	6	6	0
USAOC&S	8	8	0
USAES	9	6	3
USAAGS	2	2	0
USASC&FG	1	1	0
USAMEDDC&S	8	6	2
USAAC&FR	1	0	1
TRAC-LEE	19	16	3
TOTAL	196	175	21

Concurred without specific comments:

HQDA ODCSPER	USAMSAA
USARPAC	USAADAS
USATSC	USAFAS
USACS	

Comments not accepted and rationale:

HQDA/ODCSLOG.

Comment. Discussion of MWR requirements is misplaced in paragraph 1.a. We suggest discussion later in the document.

Rationale for nonacceptance. The FP effort is to better soldier quality of life in the field. This should be presented up front.

FORSCOM.

Comment. Employment/command and control should be clarified for the different operating continuum that may exist.

Rationale for nonacceptance. Details on this aspect of the FP are in the operational concept and future doctrinal publications.

USANCA.

Comment. Add: "...tents, shall be hardened to the effects of NBC contamination and decontamination agents, shall be designed to be decontaminated to negligible risk levels and be compatible..."

Rationale for nonacceptance. Requirements are currently desirable, as some initial equipment may not have been developed to meet stated contamination criteria. The P3I items will meet these criteria.

USATACOM.

Comment. Change the statement to read: "compatible with personnel in...posture IV equipment and the cold weather ensemble."

Rationale for nonacceptance. Per Office of the Deputy Chief of Staff for Operations and Plans guidance, the FP is not envisioned to operate in contaminated environments.

USAOEC.

Comments. Consider typing IOC to minimum support items identified in paragraph 4.a.(2) of the ORD.

Rationale for nonacceptance. Power, lights, and climate control equipment help provide quality of life needs.

USABRDEC.

Comment. Delete 8'x8'x20' and substitute 8'x8-1/2'x20' ISO containers.

Rationale for nonacceptance. Tactical airlift assets (C-130/141) cannot accommodate an 8'x8-1/2'x20' container.

Comment. Recommend adding additional information to include: Program Management Documentation, Operational/Technical Testing along with IPR/TC schedules.

Rationale for nonacceptance. Documentation and testing in-process reviews must be done prior to TC. TC must be done prior to fielding starts. This is not necessary.

USANRDEC.

Comment. Delete the sentence referring to a requirement for all support equipment to be organic to the FP.

Rationale for nonacceptance. Equipment will be available in support packages or organic to the FP.

Comment. Requirements for water should be given in days of supply, not in terms of gallons.

Rationale for nonacceptance. Doctrinal water support requirements are calculated in terms of gallons/person/day.

Comment. Delete microwave operations.

Rationale for nonacceptance. Microwave operations are now a desirable capability.

Comment. Identify equipment requirements for the MWR capability.

Rationale for nonacceptance. The FP requirement is to provide space for MWR activities. Examples of possible equipment are shown.

Comment. Standard Army camouflage procedures should be included to prevent detection.

Rationale for nonacceptance. The extra weight and cube are not justified. Use of the FP is based on METT-T.

USAES.

Comment. Add or insert camouflage to the FP system.

Rationale for nonacceptance. See the answer to NRDEC's last comment, above. Also, camouflage netting will be identified in a separate support package.

Comment. The FP must defeat threat reconnaissance intelligence, surveillance, and target acquisition sensors from satellites, airborne platforms, and precision guided "smart" munitions.

Rationale for nonacceptance. The FP will not be employed in an area if threat operations are envisioned. Use of the FP is METT-T dependent.

USAMEDDC&S.

Comment. Move the transportability capabilities paragraph to the critical system characteri9stics paragraph (4.c.).

Rationale for nonacceptance. The DOD Manual 5000.2M specifies the information required in paragraph 4.c. Also, all minimum functional equipment requirements could be critical.

Comment. Add to the rationale paragraph: "including personnel operating the system" after "billeting of personnel."

Rationale for nonacceptance. Personnel operating the FP will have their own unit equipment for this purpose.

USAAC.

Comment. Cancel the MNS for a Containerized Self-Service Laundry (CSSL) System, and procure the subsystem for use as a stand-alone system at the brigade level.

Rationale for nonacceptance. The CSSL is a separate and distinct acquisition program for use at brigade level. The MNS is needed to continue the program.

TRAC-LEE.

Comment. Delete the sentence about the requirements for any weather, oceanographic, or historiographical support.

Rationale for nonacceptance. The DOD Manual 5000.2 requires this discussion in this paragraph.

Comment. Why is paragraph 4 the first paragraph? If it references throughout this annex to paragraph 4 of the ORD, so state.

Rationale for nonacceptance. This is the required format for Annex A.

ANNEX D

FUNDING IMPLICATIONS

The FP has research, development, test, and evaluation (RDT&E) funding via the Soldier Enhancement Program. The RDT&E funding amounts to $12.1 million for FY 92-94. From FY 95 to FY 98, a programmed procurement for 6 packages (3,300 supported personnel per package) will occur at a projected equipment cost of $230 million. Operating personnel requirements and associated costs are not yet fully established.

FRONT END ANALYSIS SUMMARY
for a 550-Soldier Module
(Sep 92)

The following four alternative systems are being evaluated:

	Minimum Cost
Tent System	$1,750,000
Containerized System	$7,500,000
Commercial System	$1,700,000
Hybrid System	$1,500,000

The following utilities will be used for the four systems being evaluated:

	Minimum Cost
Fuel	$ 100,000
Water	270,000
Power Generation	855,000
Power Distribution	384,000
Area Lighting	75,000
Waste Water Collection	150,000
	$1,834,000

APPENDIX B

DRAFT MISSION NEEDS SUMMARY FOR MOBILE WASTEWATER TREATMENT PLANT

MISSION NEEDS STATEMENT
FOR
MOBILE WASTEWATER TREATMENT PLANT

1. Defense Planning Guidance Element: Acting upon this need will contribute to controlling a potential medical threat brought on by waste borne diseases in the field. It will also satisfy environmental regulations and concerns.

2. Mission and Threat Analysis:

a. Mission Analysis. doctrine as outlined in FM 21-10 Field Hygiene and Sanitation identifies "cat holes", straddle trenches, burnout latrines, and urine soakage pits for the disposal of human waste. It further suggests that soakage pits or evaporation beds be used for wastewater generated from field showers and kitchen operations. Environmental regulations and policies restrict military units from using most field expedient methods for disposing human waste and wastewater during military exercises and operations; therefore, commanders are dependant on contractor or host nation support when available. When services are not available, waste becomes a problem for both the individual and the unit in the field. A requirement exists for a wastewater treatment plant that can be out into operation in the absence of contractor or host nation support. The plant must be sufficiently mobile, and will range in size in order to service large facilities such as Force Provider in Corps and Comm areas as well as portable latrines in the division area.

b. Threat. The Mobile Wastewater Treatment Plant does not counter any specific threat. The plant capability and its associated personnel are vulnerable to the entire spectrum of threat destruction/or disruption capabilities at all levels of conflict along the operational continuum. Though unlikely, the Mobile Treatment Plant capability may be attacked as a target of opportunity. Destructive capabilities such as direct and indirect fire, small arms fire and sabotage can harm the system and associated personnel. This capability also will be susceptible to contamination. The NBC operations and weapons effects may render the plant temporarily unusable or may destroy it.

3. Nonmaterial Alternatives. Doctrine, training, leadership and organization have been reviewed for possible solutions: none were found that will yield a means of waste disposal that will satisfy environmental regulations and concerns.

4. Potential Material Alternatives. There may also be a potential for interservice or allied cooperation. Alternatives are: Adapt commercial treatment systems to U.S. Army requirements: Do nothing and rely on contractor

or host nation support, and in the absence of waste removal support, continue with field expedient methods.

5. Constraints. The Mobile Wastewater Treatment Plant must comply with industry and government safety and health hazard standards and must not present any uncontrolled safety or health hazards throughout the life cycle of the system. The plant must permit cleaning, disinfection, and inspection of components. The treatment plant must be capable of purifying blackwater from latrines and first aid stations as well as graywater from laundry, shower, and kitchen facilities. The effluent from the treatment plant will be required to meet as a minimum, the National Pollutant Discharge Elimination Systems (NPDES) standards for secondary wastewater treatment. The plant sludge production should be minimized. The treatment plant configuration should not exceed dimensions of 8'x8'x20'and will be ground transportable by vehicles organic to U.S. Army units, and air transportable in C-130 aircraft and larger. The plant is not considered mission essential, therefore it need not be NBC survivable. The Mobile Wastewater Treatment Plant will require an increase in manpower; however, it will be incorporated into an existing MOS to be determined. The plant will be supported IAW the Army's standard, four-level maintenance system. IT must be supported by the standard Army logistics system, and only standard tools will be used. No special tools or new tools will be required to support the plant. The Mobile Wastewater Treatment Plant will be capable of being operated, transported and stored in climatic environments basic and hot without additional protection(i.e., shelters). Institutional and unit training will be required for operator and maintenance personnel.

6. Joint Potential Designator. TBD.

APPENDIX C

HIERARCHY WEIGHTING

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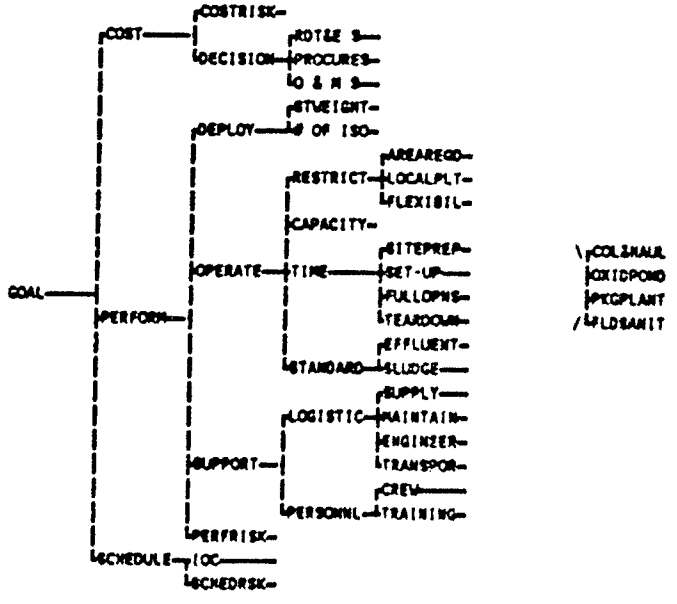
C. GALLION, BRTRC Technology Research Corporation

SELECT THE BEST ALTERNATIVE APPROACH FOR FP WASTEWATER TREATMENT



OF ISO --- NUMBER OF STANDARD 8X8X20 FOOT ISO CONTAINERS REQUIRED PER MODULE
AREAREQD --- AREA IN ACRES REQUIRED TO SET-UP AND OPERATE THE WAT SYSTEM
CAPACITY --- COMBINED GRAYWATER/BLACKWATER CAPACITY IN GALLONS PER DAY (GPD)
COL&HAUL --- COLLECT WASTEWATER AND TRANSPORT TO A LOCAL TREATMENT FACILITY
COST --- WHAT ARE THE MAJOR COST ELEMENTS FOR EACH ALTERNATIVE?
COSTRISK --- MAGNITUDE OF THE COSTING RISKS OR UNCERTAINTIES
CREW --- NUMBER OF CREWPERSONS NECESSARY TO OPERATE AND MAINTAIN SYSTEM
DECISION --- MAGNITUDE OF THE DECISION COSTS OF THE ALTERNATIVES
DEPLOY --- DEPLOYABILITY/TRANSPORTABILITY CHARACTERISTICS OF ALTERNATIVES
EFFLUENT --- COMBINED BOD REDUCTION AND PERCENT SOLIDS AFTER TREATMENT
ENGINEER --- LEVEL OF ENGINEER EFFORT NECESSARY TO SITE, INSTALL, ERECT SYSTEM
FLDSANIT --- FIELD SANITATION METHODS, SOAKAGE PITS AND BURNOUT LATRINES
FLEXIBIL --- LEVEL OF DEPENDENCY ON SITE CONDITIONS AND LOCAL ORDINANCES
FULLOPNS --- DELAY TIME FROM INITIAL SET-UP UNTIL FULL OPERATIONS ARE UNDERWAY
IOC --- TIME IN YEARS UNTIL INITIAL OPERATIONAL CAPABILITY IS ACHIEVED
LOCALPLT --- DEGREE OF DEPENDENCE ON THE AVAILABILITY/PROXIMITY OF HOST PLANT
LOGISTIC --- LOGISTICS SUPPORT REQUIRED TO OPERATE AND MAINTAIN THE SYSTEM
MAINTAIN --- LEVEL OF NON-STANDARD MAINTENANCE REQUIREMENTS TO SUPPORT SYSTEM
O & M $ --- OPERATIONS & MAINTENANCE APPROPRIATION - FY95 CONSTANT DOLLARS
OPERATE --- MISSION OR OPERATIONAL FEATURES OF THE ALTERNATIVES
OXIDPOND --- OXIDATION POND OR SEWAGE LAGOON (300 X 900 X 5 FEET)
PERFORM --- WHAT ARE THE PRINCIPAL MISSION PERFORMANCE CRITERIA?
PERFRISK --- LEVEL OF RISK IN MEETING THE REQUIRED PERFORMANCE OBJECTIVES
PERSONNL --- PERSONNEL SUPPORT REQUIRED TO OPERATE, MAINTAIN, AND TRAIN
PKGPLANT --- PACKAGED WASTEWATER TREATMENT PLANT (COMMERCIAL TYPE)
PROCURES --- PROCUREMENT APPROPRIATION COSTS - FY95 CONSTANT DOLLARS
RDT&E $ --- RESEARCH, DEVELOPMENT, TEST, & EVALUATION - FY 95 CONSTANT DOLLAR

SELECT THE BEST ALTERNATIVE APPROACH FOR FP WASTEWATER TREATMENT

RESTRICT --- RESTRICTIONS ASSOCIATED WITH THE OPERATION OF THE SYSTEM
SCHEDRSK --- LEVEL OF RISK ASSOCIATED WITH ACHIEVING THE SPECIFIED IOC
SCHEDULE --- WHAT ARE THE MAJOR SCHEDULE DIFFERENCES BETWEEN ALTERNATIVES?
SET-UP --- SET-UP TIME FOR THE ERECTION OF THE SYSTEM
SITEPREP --- SITE PREPARATION TIME REQUIRED
SIZECUBE --- LENGTH, WIDTH, AND HEIGHT IN FEET OF LARGEST MODULE
SLUDGE --- QUANTITY OF SLUDGE PRODUCED AND QUALITY OF FINAL PRODUCT
SOAKPITS --- SEEPAGE PITS FOR SHOWER WASTEWATER AND BURNOUT LATRINES
STANDARD --- TO WHAT DEGREE DO THE BY-PRODUCTS OF TREATMENT MEET NPDES STDS?
STWEIGHT --- DEPLOYMENT WEIGHT IN SHORT TONS (ST)
SUPPLY --- LEVEL OF NON-STANDARD SUPPLY REQUIREMENTS TO SUPPORT THE SYSTEM
SUPPORT --- SUPPORT REQUIREMENTS FOR THE ALTERNATIVES
TEARDOWN --- TIME REQUIRED TO TEARDOWN AND PREPARE THE SYSTEM FOR SHIPMENT
TIME --- TIME IN HOURS FOR VARIOUS ELEMENTS OF SET-UP AND OPERATION
TRAINING --- DURATION OF ASI TRAINING REQUIRED FOR OPERATORS/MAINTAINERS
TRANSPOR --- LEVEL OF EXTERNAL TRANSPORTATION EFFORT TO SUPPORT THE SYSTEM
WEIGHT --- TOTAL SYSTEM WEIGHT IN POUNDS (LBS) TO SUPPORT ONE FP MODULE

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C. GALLION, BRTRC Technology Research Corporation

Verbal judgments of IMPORTANCE with respect to:

GOAL Node: 0

1	COST	9 8 7 6 5 4 3 2	1	2 3 4 5 6 7 8 9	PERFORM
2	COST	9 8 7 6 5 4 3 2	1	2 3 4 5 6 7 8 9	SCHEDULE
3	PERFORM	9 8 7 6 5 4 3 2	1	2 3 4 5 6 7 8 9	SCHEDULE

1=EQUAL 3=MODERATE 5=STRONG 7=VERY STRONG 9=EXTREME

GOAL: SELECT THE BEST ALTERNATIVE APPROACH FOR FP WASTEWATER TREATMENT

COST --- WHAT ARE THE MAJOR COST ELEMENTS FOR EACH ALTERNATIVE?
PERFORM --- WHAT ARE THE PRINCIPAL MISSION PERFORMANCE CRITERIA?
SCHEDULE --- WHAT ARE THE MAJOR SCHEDULE DIFFERENCES BETWEEN ALTERNATIVES?

PRIORITIES

0.218
COST

0.691
PERFORM

0.091
SCHEDULE

INCONSISTENCY RATIO = 0.051.

Graphical judgments of IMPORTANCE with respect to:
COST < GOAL Mode: 10000

1	COSTRISK	[redacted]ION

GOAL: SELECT THE BEST ALTERNATIVE APPROACH FOR FP WASTEWATER TREATMENT

COST --- WHAT ARE THE MAJOR COST ELEMENTS FOR EACH ALTERNATIVE?
COSTRISK --- MAGNITUDE OF THE COSTING RISKS OR UNCERTAINTIES
DECISION --- MAGNITUDE OF THE DECISION COSTS OF THE ALTERNATIVES

PRIORITIES

0.250
COSTRISK [redacted]
0.750
DECISION [redacted]

INCONSISTENCY RATIO = 0.000.

Verbal judgments of IMPORTANCE with respect to:
DECISION < COST < GOAL Node: 12000

1	RDT&E $	9	8	7	6	5	4	3	2		2	3	4	5	6	7	8	9	PROCURES
2	RDT&E $	9	8	7	6	5	4	3	2		2	3	4	5	6	7	8	9	O & M $
3	PROCURES	9	8	7	6	5	4	3	2		2	3	4	5	6	7	3	9	O & M $

1=EQUAL 3=MODERATE 5=STRONG 7=VERY STRONG 9=EXTREME

GOAL: SELECT THE BEST ALTERNATIVE APPROACH FOR FP WASTEWATER TREATMENT

COST --- WHAT ARE THE MAJOR COST ELEMENTS FOR EACH ALTERNATIVE?
DECISION --- MAGNITUDE OF THE DECISION COSTS OF THE ALTERNATIVES
O & M $ --- OPERATIONS & MAINTENANCE APPROPRIATION - FY95 CONSTANT DOLLARS
PROCURES --- PROCUREMENT APPROPRIATION COSTS - FY95 CONSTANT DOLLARS
RDT&E $ --- RESEARCH, DEVELOPMENT, TEST, & EVALUATION - FY 95 CONSTANT DOLLAR

PRIORITIES

0.333
RDT&E $
0.333
PROCURES
0.333
O & M $

INCONSISTENCY RATIO = 0.000.

Verbal judgments of IMPORTANCE with respect to:
PERFORM < GOAL Mode: 20000

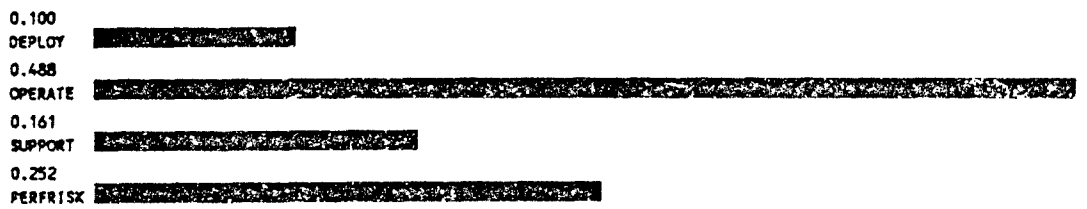
1	DEPLOY	9 8 7 6 5 4 3 2	1	2 3 4 [redacted] 6 7 8 9	OPERATE
2	DEPLOY	9 8 7 6 5 4 3 2	1	[redacted] 3 4 5 6 7 8 9	SUPPORT
3	DEPLOY	9 8 7 6 5 4 3 2	1	[redacted] 3 4 5 6 7 8 9	PERFRISK
4	OPERATE	9 8 7 6 5 4 [redacted] 2	1	2 3 4 5 6 7 8 9	SUPPORT
5	OPERATE	9 8 7 6 5 4 3 [redacted]	1	2 3 4 5 6 7 8 9	PERFRISK
6	SUPPORT	9 8 7 6 5 4 3 2	1	[redacted] 3 4 5 6 7 8 9	PERFRISK

1=EQUAL 3=MODERATE 5=STRONG 7=VERY STRONG 9=EXTREME

GOAL: SELECT THE BEST ALTERNATIVE APPROACH FOR FP WASTEWATER TREATMENT

DEPLOY --- DEPLOYABILITY/TRANSPORTABILITY CHARACTERISTICS OF ALTERNATIVES
OPERATE --- MISSION OR OPERATIONAL FEATURES OF THE ALTERNATIVES
PERFORM --- WHAT ARE THE PRINCIPAL MISSION PERFORMANCE CRITERIA?
PERFRISK --- LEVEL OF RISK IN MEETING THE REQUIRED PERFORMANCE OBJECTIVES
SUPPORT --- SUPPORT REQUIREMENTS FOR THE ALTERNATIVES

PRIORITIES



INCONSISTENCY RATIO = 0.015.

Graphical judgments of IMPORTANCE with respect to:
DEPLOY < PERFORM < GOAL Node: 21000

1	STWEIGHT	[redacted] ISO

GOAL: SELECT THE BEST ALTERNATIVE APPROACH FOR FP WASTEWATER TREATMENT

OF ISO --- NUMBER OF STANDARD 8X8X20 FOOT ISO CONTAINERS REQUIRED PER MODULE
DEPLOY --- DEPLOYABILITY/TRANSPORTABILITY CHARACTERISTICS OF ALTERNATIVES
PERFORM --- WHAT ARE THE PRINCIPAL MISSION PERFORMANCE CRITERIA?
STWEIGHT --- DEPLOYMENT WEIGHT IN SHORT TONS (ST)

PRIORITIES

0.250
STWEIGHT [redacted]
0.750
OF ISO [redacted]

INCONSISTENCY RATIO = 0.000.

Verbal Judgments of IMPORTANCE with respect to:
OPERATE < PERFORM < GOAL Mode: 22000

1	RESTRICT	9 8 7 6 5 4 ▮ 2	1	2 3 4 5 6 7 8 9	CAPACITY
2	RESTRICT	9 8 7 6 5 ▮ 3 2	1	2 3 4 5 6 7 8 9	TIME
3	RESTRICT	9 8 7 6 5 4 3 2	▮	2 3 4 5 6 7 8 9	STANDARD
4	CAPACITY	9 8 7 6 5 4 ▮ 2	1	2 3 4 5 6 7 8 9	TIME
5	CAPACITY	9 8 7 6 5 4 3 2	1	▮ 3 4 5 6 7 8 9	STANDARD
6	TIME	9 8 7 6 5 4 3 2	1	2 3 4 5 ▮ 7 8 9	STANDARD

1=EQUAL 3=MODERATE 5=STRONG 7=VERY STRONG 9=EXTREME

GOAL: SELECT THE BEST ALTERNATIVE APPROACH FOR FP WASTEWATER TREATMENT

CAPACITY --- COMBINED GRAYWATER/BLACKWATER CAPACITY IN GALLONS PER DAY (GPD)
OPERATE --- MISSION OR OPERATIONAL FEATURES OF THE ALTERNATIVES
PERFORM --- WHAT ARE THE PRINCIPAL MISSION PERFORMANCE CRITERIA?
RESTRICT --- RESTRICTIONS ASSOCIATED WITH THE OPERATION OF THE SYSTEM
STANDARD --- TO WHAT DEGREE DO THE BY-PRODUCTS OF TREATMENT MEET NPDES STDS?
TIME --- TIME IN HOURS FOR VARIOUS ELEMENTS OF SET-UP AND OPERATION

PRIORITIES

0.383
RESTRICT

0.172
CAPACITY

0.070
TIME

0.375
STANDARD

INCONSISTENCY RATIO = 0.023.

Verbal judgments of IMPORTANCE with respect to:
RESTRICT < OPERATE < PERFORM < GOAL Node: 22100

1	AREAREQD	9 8 7 6 5 4 3 2	1	2 ▮ 4 5 6 7 8 9	LOCALPLT
2	AREAREQD	9 8 7 6 5 4 3 2	1	2 3 4 ▮ 6 7 8 9	FLEXIBIL
3	LOCALPLT	9 8 7 6 5 4 3 2	1	2 ▮ 4 5 6 7 8 9	FLEXIBIL

1=EQUAL 3=MODERATE 5=STRONG 7=VERY STRONG 9=EXTREME

GOAL: SELECT THE BEST ALTERNATIVE APPROACH FOR FP WASTEWATER TREATMENT

AREAREQD --- AREA IN ACRES REQUIRED TO SET-UP AND OPERATE THE WWT SYSTEM
FLEXIBIL --- LEVEL OF DEPENDENCY ON SITE CONDITIONS AND LOCAL ORDINANCES
LOCALPLT --- DEGREE OF DEPENDENCE ON THE AVAILABILITY/PROXIMITY OF HOST PLANT
OPERATE --- MISSION OR OPERATIONAL FEATURES OF THE ALTERNATIVES
PERFORM --- WHAT ARE THE PRINCIPAL MISSION PERFORMANCE CRITERIA?
RESTRICT --- RESTRICTIONS ASSOCIATED WITH THE OPERATION OF THE SYSTEM

PRIORITIES

0.122
AREAREQD
0.230
LOCALPLT
0.648
FLEXIBIL

INCONSISTENCY RATIO = 0.004.

Verbal judgments of IMPORTANCE with respect to:
TIME < OPERATE < PERFORM < GOAL Node: 22300

1	SITEPREP	9 8 7 6 5 4 [2]	1	2 3 4 5 6 7 8 9	SET-UP
2	SITEPREP	9 8 7 6 5 4 [2]	1	2 3 4 5 6 7 8 9	FULLOPNS
3	SITEPREP	9 8 7 6 5 4 [2]	1	2 3 4 5 6 7 8 9	TEARDOWN
4	SET-UP	9 8 7 6 5 4 3 2 [1]	2	3 4 5 6 7 8 9	FULLOPNS
5	SET-UP	9 8 7 6 5 4 3 [1]	2	3 4 5 6 7 8 9	TEARDOWN
6	FULLOPNS	9 8 7 6 5 4 3 [1]	2	3 4 5 6 7 8 9	TEARDOWN

1=EQUAL 3=MODERATE 5=STRONG 7=VERY STRONG 9=EXTREME

GOAL: SELECT THE BEST ALTERNATIVE APPROACH FOR FP WASTEWATER TREATMENT

FULLOPNS --- DELAY TIME FROM INITIAL SET-UP UNTIL FULL OPERATIONS ARE UNDERWAY
OPERATE --- MISSION OR OPERATIONAL FEATURES OF THE ALTERNATIVES
PERFORM --- WHAT ARE THE PRINCIPAL MISSION PERFORMANCE CRITERIA?
SET-UP --- SET-UP TIME FOR THE ERECTION OF THE SYSTEM
SITEPREP --- SITE PREPARATION TIME REQUIRED
TEARDOWN --- TIME REQUIRED TO TEARDOWN AND PREPARE THE SYSTEM FOR SHIPMENT
TIME --- TIME IN HOURS FOR VARIOUS ELEMENTS OF SET-UP AND OPERATION

PRIORITIES

0.495
SITEPREP
0.194
SET-UP
0.194
FULLOPNS
0.117
TEARDOWN

INCONSISTENCY RATIO = 0.023.

Graphical judgments of IMPORTANCE with respect to:
STANDARD < OPERATE < PERFORM < GOAL Node: 22400

1	EFFLUENT	SLUDGE

GOAL: SELECT THE BEST ALTERNATIVE APPROACH FOR FP WASTEWATER TREATMENT

EFFLUENT --- COMBINED BOD REDUCTION AND PERCENT SOLIDS AFTER TREATMENT
OPERATE --- MISSION OR OPERATIONAL FEATURES OF THE ALTERNATIVES
PERFORM --- WHAT ARE THE PRINCIPAL MISSION PERFORMANCE CRITERIA?
SLUDGE --- QUANTITY OF SLUDGE PRODUCED AND QUALITY OF FINAL PRODUCT
STANDARD --- TO WHAT DEGREE DO THE BY-PRODUCTS OF TREATMENT MEET NPDES STDS?

PRIORITIES

0.669
EFFLUENT

0.331
SLUDGE

INCONSISTENCY RATIO = 0.000.

Graphical judgments of IMPORTANCE with respect to:
SUPPORT < PERFORM < GOAL Node: 23000

1	LOGISTIC	PERSONNL

GOAL: SELECT THE BEST ALTERNATIVE APPROACH FOR FP WASTEWATER TREATMENT

LOGISTIC --- LOGISTICS SUPPORT REQUIRED TO OPERATE AND MAINTAIN THE SYSTEM
PERFORM --- WHAT ARE THE PRINCIPAL MISSION PERFORMANCE CRITERIA?
PERSONNL --- PERSONNEL SUPPORT REQUIRED TO OPERATE, MAINTAIN, AND TRAIN
SUPPORT --- SUPPORT REQUIREMENTS FOR THE ALTERNATIVES

PRIORITIES

0.600
LOGISTIC
0.400
PERSONNL

INCONSISTENCY RATIO = 0.000.

Verbal judgments of IMPORTANCE with respect to:
LOGISTIC < SUPPORT < PERFORM < GOAL Node: Z3100

1	SUPPLY	9 8 7 6 5 4 3 2	[redacted]	2 3 4 5 6 7 8 9	MAINTAIN
2	SUPPLY	9 8 7 6 5 4 3 2	1	[redacted] 3 4 5 6 7 8 9	ENGINEER
3	SUPPLY	9 8 7 6 5 4 3 2	1	[redacted] 3 4 5 6 7 8 9	TRANSPOR
4	MAINTAIN	9 8 7 6 5 4 3 2	1	[redacted] 3 4 5 6 7 8 9	ENGINEER
5	MAINTAIN	9 8 7 6 5 4 3 2	1	[redacted] 3 4 5 6 7 8 9	TRANSPOR
6	ENGINEER	9 8 7 6 5 4 3 [redacted]	1	2 3 4 5 6 7 8 9	TRANSPOR

1=EQUAL 3=MODERATE 5=STRONG 7=VERY STRONG 9=EXTREME

GOAL: SELECT THE BEST ALTERNATIVE APPROACH FOR FP WASTEWATER TREATMENT

ENGINEER --- LEVEL OF ENGINEER EFFORT NECESSARY TO SITE, INSTALL, ERECT SYSTEM
LOGISTIC --- LOGISTICS SUPPORT REQUIRED TO OPERATE AND MAINTAIN THE SYSTEM
MAINTAIN --- LEVEL OF NON-STANDARD MAINTENANCE REQUIREMENTS TO SUPPORT SYSTEM
PERFORM --- WHAT ARE THE PRINCIPAL MISSION PERFORMANCE CRITERIA?
SUPPLY --- LEVEL OF NON-STANDARD SUPPLY REQUIREMENTS TO SUPPORT THE SYSTEM
SUPPORT --- SUPPORT REQUIREMENTS FOR THE ALTERNATIVES
TRANSPOR --- LEVEL OF EXTERNAL TRANSPORTATION EFFORT TO SUPPORT THE SYSTEM

PRIORITIES

0.163
SUPPLY [redacted]
0.163
MAINTAIN [redacted]
0.395
ENGINEER [redacted]
0.278
TRANSPOR [redacted]

INCONSISTENCY RATIO = 0.023.

Graphical judgments of IMPORTANCE with respect to:
PERSONNL < SUPPORT < PERFORM < GOAL Node: 23200

1	CREW		TRAINING

GOAL: SELECT THE BEST ALTERNATIVE APPROACH FOR PP WASTEWATER TREATMENT

CREW --- NUMBER OF CREWPERSONS NECESSARY TO OPERATE AND MAINTAIN SYSTEM
PERFORM --- WHAT ARE THE PRINCIPAL MISSION PERFORMANCE CRITERIA?
PERSONNL --- PERSONNEL SUPPORT REQUIRED TO OPERATE, MAINTAIN, AND TRAIN
SUPPORT --- SUPPORT REQUIREMENTS FOR THE ALTERNATIVES
TRAINING --- DURATION OF ASI TRAINING REQUIRED FOR OPERATORS/MAINTAINERS

PRIORITIES

0.750
CREW

0.250
TRAINING

INCONSISTENCY RATIO = 0.000.

Graphical judgments of IMPORTANCE with respect to:
SCHEDULE < GOAL Node: 30000

1	IOC	[redacted]	SCHEDRSK

GOAL: SELECT THE BEST ALTERNATIVE APPROACH FOR FP WASTEWATER TREATMENT

IOC --- TIME IN YEARS UNTIL INITIAL OPERATIONAL CAPABILITY IS ACHIEVED
SCHEDRSK --- LEVEL OF RISK ASSOCIATED WITH ACHIEVING THE SPECIFIED IOC
SCHEDULE --- WHAT ARE THE MAJOR SCHEDULE DIFFERENCES BETWEEN ALTERNATIVES?

PRIORITIES

0.670
IOC [redacted]
0.330
SCHEDRSK [redacted]

INCONSISTENCY RATIO = 0.000.

APPENDIX D

DECISION COST ESTIMATE FOR COLLECT AND HAUL AWAY APPROACH

ID: 1 Title: COLLECT AND HAUL AWAY APPROACH FOR FORCE PROVIDER WASTEWATER 06/21/94

First Year: 1995

DESCRIPTION:
This alternative approach will collect and haul away the wastewater from Force Provider.

The Force Provider package is a tent-based facility developed to give the front-line soldier a brief respite from the rigors of field operations in a combat theater. Specifically it is designed to provide each soldier with three hot meals a day, laundered clothing, environmentally controlled shelters, showers, modern latrines, and morale, welfare, and recreation facilities. Conceptually, Force Provider is similar to the US Air Force "Harvest" family of systems.

Force Provider will be air transportable, containerized, and modular in order to enhance its deployability, transportability, and flexibility. Each Force Provider package will contain all material necessary to provide food, billeting, and hygiene to 3,300 soldiers per rotation. It will be composed of six 550-soldier modules, with each module capable of independent operations. The separate modules of Force Provider are designed primarily for use in the division support area to provide rest and recuperation for forward deployed units. However, the modules may also be deployed along MSR's to provide convoy support and at aerial or sea Ports of Debarkation to facilitate force reception. In addition to these support missions in a theater of operations, Force Provider is also intended to support disaster relief and humanitarian missions (Reference Operational Requirements Document (ORD) for Force Provider approved 25 June 1993, Section 1.a.)

In providing support in all these situations, Force Provider produces considerable volumes of wastewater from the showers, laundries, kitchen, and latrines. This Decision Cost Estimate develops the costs for collecting the wastewater and hauling it to an existing local or host nation treatment plant or other acceptable disposal site. It has been prepared to support the Best Technical Approach (BTA) which will identify the best wastewater disposal method to meet the Combat Developer's requirements.

TECHNICAL:
The vehicles used for costing purposed in this Decision Cost Estimate are standard Army M939 chassis mounted with pumps and 1000 gallon wastewater collection tanks.

	Primary POC	Other POC
POC:	Drew Downing	Capt. Simon Nour
Organization:	MOBILITY TECH CTR BELVOIR	MOBILITY TECH CTR BELVOIR
Office symbol:	AMSTA-RSWE	AMSTA-RSWE
Comm phone:	(703) 704-3352	(703) 704-3357
DSN:	654-3352	654-3357
FAX:	(703) 704-3360	(703) 704-3360

ASSUMPTIONS - COLLECT AND HAUL AWAY ALTERNATIVE TO SUPPORT FORCE PROVIDER

1. This alternative assumes that the host nation or supported agency provides a treatment plant or other acceptable disposal site to which the wastewater can be hauled.

2. All costs are in thousands of FY 1995 dollars, with inflation applied in accordance with Hq Army Materiel Command (AMCRM-E) Memo, Subject: Inflation Guidance dated 7 February 1994.

3. The Operational Requirements Document for the Force Provider plans Initial Procurement for FY 1995 and Initial Operational Capability (IOC) in FY 1996. The Wastewater Treatment System is identified as a Preplanned Product Improvement (P3I) but should follow the Force Provider with minimum delay. Consequently, this Decision Cost Estimate assumes a modified NDI Acquisition Strategy for the tank trucks required with a Milestone I/II in FY 1995, an abbreviated EMD leading to Milestone III and Low Rate Production in FY 1997, Manufacture in FY 1998 through FY 2000, and Fielding in FY 1999 through FY 2001. This is a compressed schedule.

4. Estimation of requirements:

Standard state planning factor (< 600 population) = 70 gpd * 550 = 38,500 gpd.

However, Force Provider plans to limit water usage and estimates 48 gpd per person * 550 = 26,400 gpd.

Assuming 1000 gal tankers, = 26.4 to 38.5 tankers per day.

Assuming 1.5 hour round trip (15 min to load, 15 min to discharge, and 1 hour round trip road time), this = 39.6 to 58.5 tanker-hours.

Assuming a 10-hour day, requirement is for 6 + 1 in reserve = 7 tankers for standard planning factors and 4 +1 = 5 tankers for Force Provider planning factor).

This estimate uses the Force Provider planning factor for the basic estimate and uses the standard planning factor for the sensitivity analysis.

Using the lower value, 5 * 36 = 180 trucks for all six Force Provider companies.

5. This Decision Cost Estimate estimates the cost of buying the trucks. The BTA analysis will consider also the cost of contracting for them.

6. Based on the schedule and requirements above, system costs for this Decision Cost Estimate are allocated across the life cycle cost years based on the following quantities:

Year	Production Quantity	Fielding Quantity	Sustainment Quantity
1997	30		
1998	50		
1999	50	80	
2000	50	50	80
2001		50	130

2002			180
2003			180
2004			180
2005			180
2006			180
2007			180
2008			180
2009			180
2010			180
2011			180
2012			180
2013			180
2014			180
2015			180
2016			180
2017			180
2018			180
2019			180
2020			100
2021			50
2022			0
Σ	180	180	3600 truck-yrs

7. Initial Deployment of the Force Provider Wastewater Collection and Hauling System will be entirely within CONUS.

ORGANIZATION OF DECISION COST ESTIMATE

This Decision Cost Estimate is composed of three parts as follows:

1. This Introduction.

2. Four Cost Matrices:
   a. Cost Totals by Phase in Constant Dollars
   b. Cost Totals by Phase in Current Dollars
   c. Cost Totals by Year in Constant Dollars
   d. Cost Totals by Year in Current Dollars

3. Cost Data Sheets and Variable Information Sheets arranged by cost category:
   1. RDT&E
   2. Procurement
   3. Construction (No Costs)
   4. Military Personnel (No Costs)
   5. O&M

MAJOR DIFFERENCES FROM BASELINE OR TOTAL LIFE CYCLE COST ESTIMATES

This Decision Cost Estimate was developed to support the Best Technical Approach (BTA) Analysis for the Force Provider Wastewater Treatment System. It differs from a Program Office Life Cycle Cost Estimate (POLCCE) or Baseline Cost Estimate for the system in two important respects:

1. Sunk costs are excluded.

2. Military Personnel Costs are excluded in accordance with Draft TRADOC Pamphlet 11-8, Para 3-2.c.1 (page 25).

BRTRC - Baseline Cost Model - V1.2
Cost Totals by Phase (Constant Dollars) ($k)

COLLECT AND HAUL AWAY APPROACH FOR FORCE PROVIDER WASTEWATER — 06/21/96

	Total	Phase I	Phase II	Phase III	Subsys 3	Subsys 4	Subsys 5
1.0 RDT&E-FUNDED ELEMENTS	3287.01	3287.01					
1.01 DEVELOPMENT ENGINEERING	2229.38	2229.38					
1.02 PRODUCIBILITY ENGR AND PLAN (PEP)	0.00	0.00					
1.03 DEVELOPMENT TOOLING	0.00	0.00					
1.04 PROTOTYPE MANUFACTURING	127.47	127.47					
1.05 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	750.00	750.00					
1.051 PROJECT MGMT ADMIN (PM CIV/MIL)	750.00	750.00					
1.052 OTHER	0.00	0.00					
1.06 SYSTEM TEST AND EVALUATION	117.31	117.31					
1.07 TRAINING	4.90	4.90					
1.08 DATA	57.96	57.96					
1.09 SUPPORT EQUIPMENT	0.00	0.00					
1.091 PECULIAR	0.00	0.00					
1.092 COMMON	0.00	0.00					
1.10 DEVELOPMENT FACILITIES	0.00	0.00					
1.11 OTHER RDT&E	0.00	0.00					
2.0 PROCUREMENT-FUNDED ELEMENTS	8482.18	8482.18					
2.01 NON-RECURRING PRODUCTION	0.00	0.00					
2.011 INITIAL PRODUCTION FACILITIES (IPF)	0.00	0.00					
2.012 PRODUCTION BASE SUPPORT (PBS)	0.00	0.00					
2.013 OTHER NON-RECURRING PRODUCTION	0.00	0.00					
2.02 RECURRING PRODUCTION	5938.81	5938.81					
2.021 MANUFACTURING	5736.06	5736.06					
2.022 RECURRING ENGINEERING	202.75	202.75					
2.023 SUSTAINING TOOLING	0.00	0.00					
2.024 QUALITY CONTROL	0.00	0.00					
2.025 OTHER RECURRING PRODUCTION	0.00	0.00					
2.03 ENGINEERING CHANGES	172.08	172.08					
2.04 SYSTEM ENGINRNG/PROGRAM MANAGEMENT	400.00	400.00					
2.041 PROJECT MGMT ADMIN	400.00	400.00					
2.042 OTHER	0.00	0.00					
2.05 SYSTEM TEST & EVALUATION, PRODUCTION	117.31	117.31					
2.06 TRAINING AIDS & EQUIPMENT	0.00	0.00					
2.07 DATA	819.78	819.78					
2.08 SUPPORT EQUIPMENT	0.00	0.00					
2.081 PECULIAR	0.00	0.00					
2.082 COMMON	0.00	0.00					
2.09 OPERATIONAL/SITE ACTIVATION	0.00	0.00					
2.10 FIELDING	1034.20	1034.20					
2.101 INITIAL DEPOT LEVEL REPARABLE (SPARES	28.68	28.68					
2.102 INITIAL CONSUMABLES (REPAIR PARTS)	28.68	28.68					
2.103 INITIAL SUPPORT EQUIPMENT	0.00	0.00					
2.104 TRANSPORTATION (EQUIPMENT TO UNIT)	965.03	965.03					
2.105 NEW EQUIPMENT TRAINING (NET)	11.81	11.81					
2.106 CONTRACTOR LOGISTICS SUPPORT	0.00	0.00					
2.11 TRAINING AMMUNITIONS/MISSILES	0.00	0.00					
2.12 WAR RESERVE AMMUNITION/MISSILES	0.00	0.00					
2.13 MODIFICATIONS	0.00	0.00					
2.14 OTHER PROCUREMENT	0.00	0.00					
3.0 MILITARY CON-FUNDED ELEMENTS	0.00	0.00					
3.01 DEVELOPMENT CONSTRUCTION	0.00	0.00					
3.02 PRODUCTION CONSTRUCTION	0.00	0.00					
3.03 OPERATIONAL/SITE ACTIVATION CON	0.00	0.00					
3.04 OTHER MC	0.00	0.00					
4.0 MIL PERSONNEL-FUNDED ELEMENTS	0.00	0.00					
4.01 CREW	0.00	0.00					
4.02 MAINTENANCE (MTOE)	0.00	0.00					
4.03 SYSTEM-SPECIFIC SUPPORT	0.00	0.00					
4.04 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00					
4.041 PROJECT MGMT ADMIN (PM MIL)	0.00	0.00					
4.042 OTHER	0.00	0.00					
4.05 REPLACEMENT PERSONNEL	0.00	0.00					
4.051 TRAINING	0.00	0.00					
4.052 PERMANENT CHANGE OF STATION (PCS)	0.00	0.00					
4.06 OTHER MP	0.00	0.00					
5.0 O&M-FUNDED ELEMENTS	35843.43	35843.43					
5.01 FIELD MAINTENANCE CIVILIAN LABOR	0.00	0.00					
5.02 SYSTEM-SPECIFIC BASE OPERATIONS	0.00	0.00					
5.03 REPLEN DEPOT-LEVEL REPARABLE (SPARES)	2227.50	2227.50					
5.04 REPLEN CONSUMABLES (REPAIR PARTS)	24057.00	24057.00					
5.05 PETROLEUM, OILS AND LUBRICANTS (POL)	5791.50	5791.50					
5.06 END-ITEM SUPPLY AND MAINTENANCE	2868.12	2868.12					
5.061 OVERHAUL (PTM)	2868.12	2868.12					
5.062 INTEGRATED MATERIEL MANAGEMENT	0.00	0.00					
5.063 SUPPLY DEPOT SUPPORT	0.00	0.00					
5.064 INDUSTRIAL READINESS	0.00	0.00					
5.065 DEMILITARIZATION	0.00	0.00					
5.07 TRANSPORTATION	689.31	689.31					
5.08 SOFTWARE	0.00	0.00					
5.09 SYS TEST AND EVAL, OPERATIONAL	0.00	0.00					
5.10 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	210.00	210.00					
5.101 PROJ MGMT ADMIN (PM CIV)	210.00	210.00					
5.102 OTHER	0.00	0.00					
5.11 TRAINING	0.00	0.00					
5.12 OTHER O&M	0.00	0.00					
6.0 DEFENSE BUS OPERATION FUND (DBOF) ELEM	0.00	0.00					
6.01 CLASS IX WAR RESERVE	0.00	0.00					
6.02 OTHER DBOF	0.00	0.00					
TOTALS	47612.62	47612.62					

BRTRC - Baseline Cost Model - V1.2
Cost Totals by Phase (Current Dollars) ($k)

COLLECT AND HAUL AWAY APPROACH FOR FORCE PROVIDER WASTEWATER 06/21/94

	Total	Phase I	Phase II	Phase III	Subsys 3	Subsys 4	Subsys 5
1.0 RDT&E-FUNDED ELEMENTS	3481.05	3481.05					
1.01 DEVELOPMENT ENGINEERING	2359.93	2359.93					
1.02 PRODUCIBILITY ENGR AND PLAN (PEP)	0.00	0.00					
1.03 DEVELOPMENT TOOLING	0.00	0.00					
1.04 PROTOTYPE MANUFACTURING	134.52	134.52					
1.05 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	796.44	796.44					
1.051 PROJECT MGMT ADMIN (PM CIV/MIL)	796.44	796.44					
1.052 OTHER	0.00	0.00					
1.06 SYSTEM TEST AND EVALUATION	123.80	123.80					
1.07 TRAINING	5.17	5.17					
1.08 DATA	61.19	61.19					
1.09 SUPPORT EQUIPMENT	0.00	0.00					
1.091 PECULIAR	0.00	0.00					
1.092 COMMON	0.00	0.00					
1.10 DEVELOPMENT FACILITIES	0.00	0.00					
1.11 OTHER RDT&E	0.00	0.00					
2.0 PROCUREMENT-FUNDED ELEMENTS	9883.42	9883.42					
2.01 NON-RECURRING PRODUCTION	0.00	0.00					
2.011 INITIAL PRODUCTION FACILITIES (IPF)	0.00	0.00					
2.012 PRODUCTION BASE SUPPORT (PBS)	0.00	0.00					
2.013 OTHER NON-RECURRING PRODUCTION	0.00	0.00					
2.02 RECURRING PRODUCTION	7014.98	7014.98					
2.021 MANUFACTURING	6776.61	6776.61					
2.022 RECURRING ENGINEERING	238.37	238.37					
2.023 SUSTAINING TOOLING	0.00	0.00					
2.024 QUALITY CONTROL	0.00	0.00					
2.025 OTHER RECURRING PRODUCTION	0.00	0.00					
2.03 ENGINEERING CHANGES	199.35	199.35					
2.04 SYSTEM ENGNRNG/PROGRAM MANAGEMENT	470.27	470.27					
2.041 PROJECT MGMT ADMIN	470.27	470.27					
2.042 OTHER	0.00	0.00					
2.05 SYSTEM TEST & EVALUATION, PRODUCTION	117.31	117.31					
2.06 TRAINING AIDS & EQUIPMENT	0.00	0.00					
2.07 DATA	819.78	819.78					
2.08 SUPPORT EQUIPMENT	0.00	0.00					
2.081 PECULIAR	0.00	0.00					
2.082 COMMON	0.00	0.00					
2.09 OPERATIONAL/SITE ACTIVATION	0.00	0.00					
2.10 FIELDING	1261.74	1261.74					
2.101 INITIAL DEPOT LEVEL REPARABLE (SPARES	33.88	33.88					
2.102 INITIAL CONSUMABLES (REPAIR PARTS)	33.88	33.88					
2.103 INITIAL SUPPORT EQUIPMENT	0.00	0.00					
2.104 TRANSPORTATION (EQUIPMENT TO UNIT)	1179.89	1179.89					
2.105 NEW EQUIPMENT TRAINING (NET)	14.08	14.08					
2.106 CONTRACTOR LOGISTICS SUPPORT	0.00	0.00					
2.11 TRAINING AMMUNITIONS/MISSILES	0.00	0.00					
2.12 WAR RESERVE AMMUNITION/MISSILES	0.00	0.00					
2.13 MODIFICATIONS	0.00	0.00					
2.14 OTHER PROCUREMENT	0.00	0.00					
3.0 MILITARY CON-FUNDED ELEMENTS	0.00	0.00					
3.01 DEVELOPMENT CONSTRUCTION	0.00	0.00					
3.02 PRODUCTION CONSTRUCTION	0.00	0.00					
3.03 OPERATIONAL/SITE ACTIVATION CON	0.00	0.00					
3.04 OTHER MC	0.00	0.00					
4.0 MIL PERSONNEL-FUNDED ELEMENTS	0.00	0.00					
4.01 CREW	0.00	0.00					
4.02 MAINTENANCE (MTOE)	0.00	0.00					
4.03 SYSTEM-SPECIFIC SUPPORT	0.00	0.00					
4.04 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00					
4.041 PROJECT MGMT ADMIN (PM MIL)	0.00	0.00					
4.042 OTHER	0.00	0.00					
4.05 REPLACEMENT PERSONNEL	0.00	0.00					
4.051 TRAINING	0.00	0.00					
4.052 PERMANENT CHANGE OF STATION (PCS)	0.00	0.00					
4.06 OTHER MP	0.00	0.00					
5.0 O&M-FUNDED ELEMENTS	58116.70	58116.70					
5.01 FIELD MAINTENANCE CIVILIAN LABOR	0.00	0.00					
5.02 SYSTEM-SPECIFIC BASE OPERATIONS	0.00	0.00					
5.03 REPLEN DEPOT-LEVEL REPARABLE (SPARES)	3615.15	3615.15					
5.04 REPLEN CONSUMABLES (REPAIR PARTS)	39043.65	39043.65					
5.05 PETROLEUM, OILS AND LUBRICANTS (POL)	9399.40	9399.40					
5.06 END-ITEM SUPPLY AND MAINTENANCE	4609.79	4609.79					
5.061 OVERHAUL (PTM)	4609.79	4609.79					
5.062 INTEGRATED MATERIEL MANAGEMENT	0.00	0.00					
5.063 SUPPLY DEPOT SUPPORT	0.00	0.00					
5.064 INDUSTRIAL READINESS	0.00	0.00					
5.065 DEMILITARIZATION	0.00	0.00					
5.07 TRANSPORTATION	1107.89	1107.89					
5.08 SOFTWARE	0.00	0.00					
5.09 SYS TEST AND EVAL, OPERATIONAL	0.00	0.00					
5.10 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	340.82	340.82					
5.101 PROJ MGMT ADMIN (PM CIV)	340.82	340.82					
5.102 OTHER	0.00	0.00					
5.11 TRAINING	0.00	0.00					
5.12 OTHER O&M	0.00	0.00					
6.0 DEFNSE BUS OPERATION FUND (DBOF) ELEM	0.00	0.00					
6.01 CLASS IX WAR RESERVE	0.00	0.00					
6.02 OTHER DBOF	0.00	0.00					
TOTALS	71481.17	71481.17					

BRTRC - Baseline Cost Model - V1.2
Cost Totals by Year (Constant Dollars) ($k)

COLLECT AND HAUL AWAY APPROACH FOR FORCE PROVIDER WASTEWATER

06/21/94

	Total	1995	1996	1997	1998	1999	2000
1.0 RDT&E-FUNDED ELEMENTS	3287.01	777.34	1379.69	1129.99	0.00	0.00	0.00
1.01 DEVELOPMENT ENGINEERING	2229.38	608.02	810.69	810.67	0.00	0.00	0.00
1.02 PRODUCIBILITY ENGR AND PLAN (PEP)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.03 DEVELOPMENT TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.04 PROTOTYPE MANUFACTURING	127.47	0.00	127.47	0.00	0.00	0.00	0.00
1.05 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	750.00	150.00	300.00	300.00	0.00	0.00	0.00
1.051 PROJECT MGMT ADMIN (PM CIV/MIL)	750.00	150.00	300.00	300.00	0.00	0.00	0.00
1.052 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.06 SYSTEM TEST AND EVALUATION	117.31	0.00	117.31	0.00	0.00	0.00	0.00
1.07 TRAINING	4.90	0.00	4.90	0.00	0.00	0.00	0.00
1.08 DATA	57.96	19.32	19.32	19.32	0.00	0.00	0.00
1.09 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.091 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.092 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.10 DEVELOPMENT FACILITIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.11 OTHER RDT&E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.0 PROCUREMENT-FUNDED ELEMENTS	8482.18	0.00	0.00	1729.51	2198.55	2229.31	2056.73
2.01 NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.011 INITIAL PRODUCTION FACILITIES (IPF)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.012 PRODUCTION BASE SUPPORT (PBS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.013 OTHER NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.02 RECURRING PRODUCTION	5938.81	0.00	0.00	1006.72	1644.05	1643.99	1644.05
2.021 MANUFACTURING	5736.06	0.00	0.00	956.03	1593.36	1593.31	1593.36
2.022 RECURRING ENGINEERING	202.75	0.00	0.00	50.69	50.69	50.69	50.69
2.023 SUSTAINING TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.024 QUALITY CONTROL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.025 OTHER RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.03 ENGINEERING CHANGES	172.08	0.00	0.00	86.04	28.68	28.68	28.68
2.04 SYSTEM ENGNRNG/PROGRAM MANAGEMENT	400.00	0.00	0.00	100.00	100.00	100.00	100.00
2.041 PROJECT MGMT ADMIN	400.00	0.00	0.00	100.00	100.00	100.00	100.00
2.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.05 SYSTEM TEST & EVALUATION, PRODUCTION	117.31	0.00	0.00	117.31	0.00	0.00	0.00
2.06 TRAINING AIDS & EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.07 DATA	819.78	0.00	0.00	409.89	409.89	0.00	0.00
2.08 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.081 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.082 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.09 OPERATIONAL/SITE ACTIVATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.10 FIELDING	1034.20	0.00	0.00	9.56	15.93	456.64	284.00
2.101 INITIAL DEPOT LEVEL REPARABLE (SPARES	28.68	0.00	0.00	4.78	7.97	7.97	7.97
2.102 INITIAL CONSUMABLES (REPAIR PARTS)	28.68	0.00	0.00	4.78	7.97	7.97	7.97
2.103 INITIAL SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.104 TRANSPORTATION (EQUIPMENT TO UNIT)	965.03	0.00	0.00	0.00	0.00	428.90	268.07
2.105 NEW EQUIPMENT TRAINING (NET)	11.81	0.00	0.00	0.00	0.00	11.81	0.00
2.106 CONTRACTOR LOGISTICS SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.11 TRAINING AMMUNITIONS/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.12 WAR RESERVE AMMUNITION/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.13 MODIFICATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.14 OTHER PROCUREMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.0 MILITARY CON-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.01 DEVELOPMENT CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.02 PRODUCTION CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.03 OPERATIONAL/SITE ACTIVATION CON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.04 OTHER MC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.0 MIL PERSONNEL-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.01 CREW	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.02 MAINTENANCE (MTOE)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.03 SYSTEM-SPECIFIC SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.04 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.041 PROJECT MGMT ADMIN (PM MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.05 REPLACEMENT PERSONNEL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.051 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.052 PERMANENT CHANGE OF STATION (PCS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.06 OTHER MP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.0 O&M-FUNDED ELEMENTS	35843.43	0.00	0.00	0.00	0.00	0.00	717.39
5.01 FIELD MAINTENANCE CIVILIAN LABOR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.02 SYSTEM-SPECIFIC BASE OPERATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.03 REPLEN DEPOT-LEVEL REPARABLE (SPARES)	2227.50	0.00	0.00	0.00	0.00	0.00	49.50
5.04 REPLEN CONSUMABLES (REPAIR PARTS)	24057.00	0.00	0.00	0.00	0.00	0.00	534.55
5.05 PETROLEUM, OILS AND LUBRICANTS (POL)	5791.50	0.00	0.00	0.00	0.00	0.00	128.69
5.06 END-ITEM SUPPLY AND MAINTENANCE	2868.12	0.00	0.00	0.00	0.00	0.00	0.00
5.061 OVERHAUL (PTM)	2868.12	0.00	0.00	0.00	0.00	0.00	0.00
5.062 INTEGRATED MATERIEL MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.063 SUPPLY DEPOT SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.064 INDUSTRIAL READINESS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.065 DEMILITARIZATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.07 TRANSPORTATION	689.31	0.00	0.00	0.00	0.00	0.00	0.00
5.08 SOFTWARE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.09 SYS TEST AND EVAL, OPERATIONAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.10 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	210.00	0.00	0.00	0.00	0.00	0.00	0.00
5.101 PROJ MGMT ADMIN (PM CIV)	210.00	0.00	0.00	0.00	0.00	0.00	4.67
5.102 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	4.67
5.11 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.12 OTHER O&M	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.0 DEFENSE BUS OPERATION FUND (DBOF) ELEM	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.01 CLASS IX WAR RESERVE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.02 OTHER DBOF	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS	47612.62	777.34	1379.69	2859.50	2198.55	2229.31	2774.12

BRTRC - Baseline Cost Model - V1.2
Cost Totals by Year (Constant Dollars) ($k)

COLLECT AND HAUL AWAY APPROACH FOR FORCE PROVIDER WASTEWATER

06/21/94

	2001	2002	2003	2004	2005	2006	2007
1.0 RDT&E-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.01 DEVELOPMENT ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.02 PRODUCIBILITY ENGR AND PLAN (PEP)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.03 DEVELOPMENT TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.04 PROTOTYPE MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.05 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.051 PROJECT MGMT ADMIN (PM CIV/MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.052 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.06 SYSTEM TEST AND EVALUATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.07 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.08 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.09 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.091 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.092 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.10 DEVELOPMENT FACILITIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.11 OTHER RDT&E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.0 PROCUREMENT-FUNDED ELEMENTS	268.07	0.00	0.00	0.00	0.00	0.00	0.00
2.01 NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.011 INITIAL PRODUCTION FACILITIES (IPF)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.012 PRODUCTION BASE SUPPORT (PBS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.013 OTHER NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.02 RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.021 MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.022 RECURRING ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.023 SUSTAINING TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.024 QUALITY CONTROL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.025 OTHER RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.03 ENGINEERING CHANGES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.04 SYSTEM ENGNRNG/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.041 PROJECT MGMT ADMIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.05 SYSTEM TEST & EVALUATION, PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.06 TRAINING AIDS & EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.07 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.08 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.081 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.082 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.09 OPERATIONAL/SITE ACTIVATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.10 FIELDING	268.07	0.00	0.00	0.00	0.00	0.00	0.00
2.101 INITIAL DEPOT LEVEL REPARABLE (SPARES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.102 INITIAL CONSUMABLES (REPAIR PARTS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.103 INITIAL SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.104 TRANSPORTATION (EQUIPMENT TO UNIT)	268.07	0.00	0.00	0.00	0.00	0.00	0.00
2.105 NEW EQUIPMENT TRAINING (NET)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.106 CONTRACTOR LOGISTICS SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.11 TRAINING AMMUNITIONS/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.12 WAR RESERVE AMMUNITION/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.13 MODIFICATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.14 OTHER PROCUREMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.0 MILITARY CON-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.01 DEVELOPMENT CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.02 PRODUCTION CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.03 OPERATIONAL/SITE ACTIVATION CON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.04 OTHER MC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.0 MIL PERSONNEL-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.01 CREW	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.02 MAINTENANCE (MTOE)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.03 SYSTEM-SPECIFIC SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.04 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.041 PROJECT MGMT ADMIN (PM MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.05 REPLACEMENT PERSONNEL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.051 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.052 PERMANENT CHANGE OF STATION (PCS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.06 OTHER MP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.0 O&M-FUNDED ELEMENTS	1165.85	1614.30	1614.30	1614.30	1614.30	1614.30	1614.30
5.01 FIELD MAINTENANCE CIVILIAN LABOR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.02 SYSTEM-SPECIFIC BASE OPERATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.03 REPLEN DEPOT-LEVEL REPARABLE (SPARES)	80.44	111.38	111.38	111.38	111.38	111.38	111.38
5.04 REPLEN CONSUMABLES (REPAIR PARTS)	868.70	1202.85	1202.85	1202.85	1202.85	1202.85	1202.85
5.05 PETROLEUM, OILS AND LUBRICANTS (POL)	209.13	289.58	289.58	289.58	289.58	289.58	289.58
5.06 END-ITEM SUPPLY AND MAINTENANCE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.061 OVERHAUL (P7M)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.062 INTEGRATED MATERIEL MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.063 SUPPLY DEPOT SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.064 INDUSTRIAL READINESS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.065 DEMILITARIZATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.07 TRANSPORTATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.08 SOFTWARE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.09 SYS TEST AND EVAL, OPERATIONAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.10 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	7.58	10.50	10.50	10.50	10.50	10.50	10.50
5.101 PROJ MGMT ADMIN (PM CIV)	7.58	10.50	10.50	10.50	10.50	10.50	10.50
5.102 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.11 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.12 OTHER O&M	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.0 DEFNSE BUS OPERATION FUND (DBOF) ELEM	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.01 CLASS IX WAR RESERVE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.02 OTHER DBOF	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS	1433.91	1614.30	1614.30	1614.30	1614.30	1614.30	1614.30

BRTRC - Baseline Cost Model - V1.2
Cost Totals by Year (Constant Dollars) ($k)

COLLECT AND HAUL AWAY APPROACH FOR FORCE PROVIDER WASTEWATER 06/21/96

	2008	2009	2010	2011	2012	2013	2014
1.0 RDT&E-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.01 DEVELOPMENT ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.02 PRODUCIBILITY ENGR AND PLAN (PEP)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.03 DEVELOPMENT TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.04 PROTOTYPE MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.05 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.051 PROJECT MGMT ADMIN (PM CIV/MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.052 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.06 SYSTEM TEST AND EVALUATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.07 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.08 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.09 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.091 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.092 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.10 DEVELOPMENT FACILITIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.11 OTHER RDT&E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.0 PROCUREMENT-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.01 NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.011 INITIAL PRODUCTION FACILITIES (IPF)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.012 PRODUCTION BASE SUPPORT (PBS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.013 OTHER NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.02 RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.021 MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.022 RECURRING ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.023 SUSTAINING TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.024 QUALITY CONTROL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.025 OTHER RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.03 ENGINEERING CHANGES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.04 SYSTEM ENGRNG/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.041 PROJECT MGMT ADMIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.05 SYSTEM TEST & EVALUATION, PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.06 TRAINING AIDS & EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.07 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.08 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.081 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.082 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.09 OPERATIONAL/SITE ACTIVATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.10 FIELDING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.101 INITIAL DEPOT LEVEL REPARABLE (SPARES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.102 INITIAL CONSUMABLES (REPAIR PARTS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.103 INITIAL SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.104 TRANSPORTATION (EQUIPMENT TO UNIT)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.105 NEW EQUIPMENT TRAINING (NET)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.106 CONTRACTOR LOGISTICS SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.11 TRAINING AMMUNITIONS/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.12 WAR RESERVE AMMUNITION/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.13 MODIFICATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.14 OTHER PROCUREMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.0 MILITARY CON-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.01 DEVELOPMENT CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.02 PRODUCTION CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.03 OPERATIONAL/SITE ACTIVATION CON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.04 OTHER MC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.0 MIL PERSONNEL-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.01 CREW	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.02 MAINTENANCE (MTOE)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.03 SYSTEM-SPECIFIC SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.04 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.041 PROJECT MGMT ADMIN (PM MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.05 REPLACEMENT PERSONNEL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.051 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.052 PERMANENT CHANGE OF STATION (PCS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.06 OTHER MP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.0 O&M-FUNDED ELEMENTS	1614.30	1614.30	3393.02	3393.02	1614.30	1614.30	1614.30
5.01 FIELD MAINTENANCE CIVILIAN LABOR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.02 SYSTEM-SPECIFIC BASE OPERATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.03 REPLEN DEPOT-LEVEL REPARABLE (SPARES)	111.38	111.38	111.38	111.38	111.38	111.38	111.38
5.04 REPLEN CONSUMABLES (REPAIR PARTS)	1202.85	1202.85	1202.85	1202.85	1202.85	1202.85	1202.85
5.05 PETROLEUM, OILS AND LUBRICANTS (POL)	289.58	289.58	289.58	289.58	289.58	289.58	289.58
5.06 END-ITEM SUPPLY AND MAINTENANCE	0.00	0.00	1434.06	1434.06	0.00	0.00	0.00
5.061 OVERHAUL (PTM)	0.00	0.00	1434.06	1434.06	0.00	0.00	0.00
5.062 INTEGRATED MATERIEL MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.063 SUPPLY DEPOT SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.064 INDUSTRIAL READINESS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.065 DEMILITARIZATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.07 TRANSPORTATION	0.00	0.00	344.66	344.66	0.00	0.00	0.00
5.08 SOFTWARE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.09 SYS TEST AND EVAL, OPERATIONAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.10 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	10.50	10.50	10.50	10.50	10.50	10.50	10.50
5.101 PROJ MGMT ADMIN (PM CIV)	10.50	10.50	10.50	10.50	10.50	10.50	10.50
5.102 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.11 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.12 OTHER O&M	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.0 DEFENSE BUS OPERATION FUND (DBOF) ELEM	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.01 CLASS IX WAR RESERVE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.02 OTHER DBOF	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS	1614.30	1614.30	3393.02	3393.02	1614.30	1614.30	1614.30

BRTRC - Baseline Cost Model - V1.2
Cost Totals by Year (Constant Dollars) ($k)

COLLECT AND HAUL AWAY APPROACH FOR FORCE PROVIDER WASTEWATER — 06/21/94

	2015	2016	2017	2018	2019	2020	2021
1.0 RDT&E-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.01 DEVELOPMENT ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.02 PRODUCIBILITY ENGR AND PLAN (PEP)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.03 DEVELOPMENT TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.04 PROTOTYPE MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.05 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.051 PROJECT MGMT ADMIN (PM CIV/MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.052 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.06 SYSTEM TEST AND EVALUATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.07 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.08 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.09 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.091 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.092 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.10 DEVELOPMENT FACILITIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.11 OTHER RDT&E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.0 PROCUREMENT-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.01 NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.011 INITIAL PRODUCTION FACILITIES (IPF)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.012 PRODUCTION BASE SUPPORT (PBS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.013 OTHER NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.02 RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.021 MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.022 RECURRING ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.023 SUSTAINING TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.024 QUALITY CONTROL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.025 OTHER RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.03 ENGINEERING CHANGES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.04 SYSTEM ENGNRNG/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.041 PROJECT MGMT ADMIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.05 SYSTEM TEST & EVALUATION, PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.06 TRAINING AIDS & EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.07 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.08 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.081 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.082 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.09 OPERATIONAL/SITE ACTIVATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.10 FIELDING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.101 INITIAL DEPOT LEVEL REPARABLE (SPARES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.102 INITIAL CONSUMABLES (REPAIR PARTS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.103 INITIAL SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.104 TRANSPORTATION (EQUIPMENT TO UNIT)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.105 NEW EQUIPMENT TRAINING (NET)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.106 CONTRACTOR LOGISTICS SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.11 TRAINING AMMUNITIONS/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.12 WAR RESERVE AMMUNITION/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.13 MODIFICATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.14 OTHER PROCUREMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.0 MILITARY CON-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.01 DEVELOPMENT CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.02 PRODUCTION CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.03 OPERATIONAL/SITE ACTIVATION CON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.04 OTHER MC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.0 MIL PERSONNEL-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.01 CREW	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.02 MAINTENANCE (MTOE)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.03 SYSTEM-SPECIFIC SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.04 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.041 PROJECT MGMT ADMIN (PM MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.05 REPLACEMENT PERSONNEL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.051 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.052 PERMANENT CHANGE OF STATION (PCS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.06 OTHER MP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.0 O&M-FUNDED ELEMENTS	1614.30	1614.30	1614.30	1614.30	1614.30	896.91	448.45
5.01 FIELD MAINTENANCE CIVILIAN LABOR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.02 SYSTEM-SPECIFIC BASE OPERATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.03 REPLEN DEPOT-LEVEL REPARABLE (SPARES)	111.38	111.38	111.38	111.38	111.38	61.88	30.94
5.04 REPLEN CONSUMABLES (REPAIR PARTS)	1202.85	1202.85	1202.85	1202.85	1202.85	668.30	334.15
5.05 PETROLEUM, OILS AND LUBRICANTS (POL)	289.58	289.58	289.58	289.58	289.58	160.89	80.44
5.06 END-ITEM SUPPLY AND MAINTENANCE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.061 OVERHAUL (P/M)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.062 INTEGRATED MATERIEL MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.063 SUPPLY DEPOT SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.064 INDUSTRIAL READINESS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.065 DEMILITARIZATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.07 TRANSPORTATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.08 SOFTWARE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.09 SYS TEST AND EVAL, OPERATIONAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.10 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	10.50	10.50	10.50	10.50	10.50	5.83	2.92
5.101 PROJ MGMT ADMIN (PM CIV)	10.50	10.50	10.50	10.50	10.50	5.83	2.92
5.102 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.11 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.12 OTHER O&M	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.0 DEFNSE BUS OPERATION FUND (DBOF) ELEM	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.01 CLASS IX WAR RESERVE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.02 OTHER DBOF	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS	1614.30	1614.30	1614.30	1614.30	1614.30	896.91	448.45

BRTRC - Baseline Cost Model - V1.2
Cost Totals by Year (Constrnt Dollars) ($k)

COLLECT AND HAUL AWAY APPROACH FOR FORCE PROVIDER WASTEWATER — 06/21/94

	2022	2023	2024	2025	2026	2027	2028
1.0 RDT&E-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.01 DEVELOPMENT ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.02 PRODUCIBILITY ENGR AND PLAN (PEP)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.03 DEVELOPMENT TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.04 PROTOTYPE MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.05 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.051 PROJECT MGMT ADMIN (PM CIV/MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.052 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.06 SYSTEM TEST AND EVALUATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.07 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.08 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.09 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.091 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.092 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.10 DEVELOPMENT FACILITIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.11 OTHER RDT&E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.0 PROCUREMENT-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.01 NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.011 INITIAL PRODUCTION FACILITIES (IPF)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.012 PRODUCTION BASE SUPPORT (PBS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.013 OTHER NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.02 RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.021 MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.022 RECURRING ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.023 SUSTAINING TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.024 QUALITY CONTROL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.025 OTHER RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.03 ENGINEERING CHANGES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.04 SYSTEM ENGNRNG/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.041 PROJECT MGMT ADMIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.05 SYSTEM TEST & EVALUATION, PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.06 TRAINING AIDS & EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.07 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.08 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.081 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.082 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.09 OPERATIONAL/SITE ACTIVATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.10 FIELDING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.101 INITIAL DEPOT LEVEL REPAIRABLE (SPARES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.102 INITIAL CONSUMABLES (REPAIR PARTS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.103 INITIAL SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.104 TRANSPORTATION (EQUIPMENT TO UNIT)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.105 NEW EQUIPMENT TRAINING (NET)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.106 CONTRACTOR LOGISTICS SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.11 TRAINING AMMUNITIONS/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.12 WAR RESERVE AMMUNITION/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.13 MODIFICATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.14 OTHER PROCUREMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.0 MILITARY CON-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.01 DEVELOPMENT CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.02 PRODUCTION CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.03 OPERATIONAL/SITE ACTIVATION CON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.04 OTHER MC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.0 MIL PERSONNEL-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.01 CREW	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.02 MAINTENANCE (MTOE)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.03 SYSTEM-SPECIFIC SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.04 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.041 PROJECT MGMT ADMIN (PM MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.05 REPLACEMENT PERSONNEL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.051 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.052 PERMANENT CHANGE OF STATION (PCS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.06 OTHER MP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.0 O&M-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.01 FIELD MAINTENANCE CIVILIAN LABOR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.02 SYSTEM-SPECIFIC BASE OPERATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.03 REPLEN DEPOT-LEVEL REPAIRABLE (SPARES)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.04 REPLEN CONSUMABLES (REPAIR PARTS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.05 PETROLEUM, OILS AND LUBRICANTS (POL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.06 END-ITEM SUPPLY AND MAINTENANCE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.061 OVERHAUL (PTM)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.062 INTEGRATED MATERIEL MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.063 SUPPLY DEPOT SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.064 INDUSTRIAL READINESS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.065 DEMILITARIZATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.07 TRANSPORTATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.08 SOFTWARE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.09 SYS TEST AND EVAL, OPERATIONAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.10 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.101 PROJ MGMT ADMIN (PM CIV)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.102 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.11 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.12 OTHER O&M	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.0 DEFENSE W/S OPERATION FUND (DBOF) ELEM	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.01 CLASS IX WAR RESERVE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.02 OTHER DBOF	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00

BRTRC - Baseline Cost Model - V1.2
Cost Totals by Year (Current Dollars) ($k)

COLLECT AND HAUL AWAY APPROACH FOR FORCE PROVIDER WASTEWATER 06/21/94

	Total	1995	1996	1997	1998	1999	2000
1.0 RDT&E-FUNDED ELEMENTS	3481.05	796.77	1455.98	1228.30	0.00	0.00	0.00
1.01 DEVELOPMENT ENGINEERING	2359.93	623.22	855.52	881.20	0.00	0.00	0.00
1.02 PRODUCIBILITY ENGR AND PLAN (PEP)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.03 DEVELOPMENT TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.04 PROTOTYPE MANUFACTURING	134.52	0.00	134.52	0.00	0.00	0.00	0.00
1.05 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	796.44	153.75	316.59	326.10	0.00	0.00	0.00
1.051 PROJECT MGMT ADMIN (PM CIV/MIL)	796.44	153.75	316.59	326.10	0.00	0.00	0.00
1.052 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.06 SYSTEM TEST AND EVALUATION	123.80	0.00	123.80	0.00	0.00	0.00	0.00
1.07 TRAINING	5.17	0.00	5.17	0.00	0.00	0.00	0.00
1.08 DATA	61.19	19.80	20.39	21.00	0.00	0.00	0.00
1.09 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.091 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.092 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.10 DEVELOPMENT FACILITIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.11 OTHER RDT&E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.0 PROCUREMENT-FUNDED ELEMENTS	9883.42	0.00	0.00	1878.72	2480.81	2658.46	2526.28
2.01 NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.011 INITIAL PRODUCTION FACILITIES (IPF)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.012 PRODUCTION BASE SUPPORT (PBS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.013 OTHER NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.02 RECURRING PRODUCTION	7014.98	0.00	0.00	1131.65	1903.48	1960.46	2019.39
2.021 MANUFACTURING	6776.61	0.00	0.00	1074.67	1844.80	1900.02	1957.13
2.022 RECURRING ENGINEERING	238.37	0.00	0.00	56.98	58.69	60.44	62.26
2.023 SUSTAINING TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.024 QUALITY CONTROL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.025 OTHER RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.03 ENGINEERING CHANGES	199.35	0.00	0.00	96.72	33.21	34.20	35.23
2.04 SYSTEM ENGNRNG/PROGRAM MANAGEMENT	470.27	0.00	0.00	112.41	115.78	119.25	122.83
2.041 PROJECT MGMT ADMIN	470.27	0.00	0.00	112.41	115.78	119.25	122.83
2.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.05 SYSTEM TEST & EVALUATION, PRODUCTION	117.31	0.00	0.00	117.31	0.00	0.00	0.00
2.06 TRAINING AIDS & EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.07 DATA	819.78	0.00	0.00	409.89	409.89	0.00	0.00
2.08 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.081 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.082 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.09 OPERATIONAL/SITE ACTIVATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.10 FIELDING	1261.74	0.00	0.00	10.75	18.45	544.54	348.84
2.101 INITIAL DEPOT LEVEL REPARABLE (SPARES	33.88	0.00	0.00	5.37	9.22	9.50	9.79
2.102 INITIAL CONSUMABLES (REPAIR PARTS)	33.88	0.00	0.00	5.37	9.22	9.50	9.79
2.103 INITIAL SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.104 TRANSPORTATION (EQUIPMENT TO UNIT)	1179.89	0.00	0.00	0.00	0.00	511.46	329.27
2.105 NEW EQUIPMENT TRAINING (NET)	14.08	0.00	0.00	0.00	0.00	14.08	0.00
2.106 CONTRACTOR LOGISTICS SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.11 TRAINING AMMUNITIONS/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.12 WAR RESERVE AMMUNITION/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.13 MODIFICATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.14 OTHER PROCUREMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.0 MILITARY CON-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.01 DEVELOPMENT CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.02 PRODUCTION CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.03 OPERATIONAL/SITE ACTIVATION CON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.04 OTHER MC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.0 MIL PERSONNEL-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.01 CREW	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.02 MAINTENANCE (MTOE)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.03 SYSTEM-SPECIFIC SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.04 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.041 PROJECT MGMT ADMIN (PM MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.05 REPLACEMENT PERSONNEL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.051 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.052 PERMANENT CHANGE OF STATION (PCS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.06 OTHER MP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.0 O&M-FUNDED ELEMENTS	58116.70	0.00	0.00	0.00	0.00	0.00	845.23
5.01 FIELD MAINTENANCE CIVILIAN LABOR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.02 SYSTEM-SPECIFIC BASE OPERATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.03 REPLEN DEPOT-LEVEL REPARABLE (SPARES)	3615.15	0.00	0.00	0.00	0.00	0.00	58.32
5.04 REPLEN CONSUMABLES (REPAIR PARTS)	39043.65	0.00	0.00	0.00	0.00	0.00	629.80
5.05 PETROLEUM, OILS AND LUBRICANTS (POL)	9399.40	0.00	0.00	0.00	0.00	0.00	151.62
5.06 END-ITEM SUPPLY AND MAINTENANCE	4609.79	0.00	0.00	0.00	0.00	0.00	0.00
5.061 OVERHAUL (P/N)	4609.79	0.00	0.00	0.00	0.00	0.00	0.00
5.062 INTEGRATED MATERIEL MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.063 SUPPLY DEPOT SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.064 INDUSTRIAL READINESS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.065 DEMILITARIZATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.07 TRANSPORTATION	1107.39	0.00	0.00	0.00	0.00	0.00	0.00
5.08 SOFTWARE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.09 SYS TEST AND EVAL, OPERATIONAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.10 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	340.82	0.00	0.00	0.00	0.00	0.00	5.50
5.101 PROJ MGMT ADMIN (PM CIV)	340.82	0.00	0.00	0.00	0.00	0.00	5.50
5.102 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.11 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.12 OTHER O&M	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.0 DEFNTE BUS OPERATION FUND (DBOF) ELEM	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.01 CLASS IX WAR RESERVE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.02 OTHER DBOF	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS	71481.17	796.77	1455.98	3107.02	2480.81	2658.46	3371.52

BRTRC - Baseline Cost Model - V1.2
Cost Totals by Year (Current Dollars) ($k)

COLLECT AND HAUL AWAY APPROACH FOR FORCE PROVIDER WASTEWATER 06/21/96

	2001	2002	2003	2004	2005	2006	2007
1.0 RDT&E-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.01 DEVELOPMENT ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.02 PRODUCIBILITY ENGR AND PLAN (PEP)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.03 DEVELOPMENT TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.04 PROTOTYPE MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.05 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.051 PROJECT MGMT ADMIN (PM CIV/MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.052 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.06 SYSTEM TEST AND EVALUATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.07 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.08 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.09 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.091 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.092 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.10 DEVELOPMENT FACILITIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.11 OTHER RDT&E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.0 PROCUREMENT-FUNDED ELEMENTS	339.16	0.00	0.00	0.00	0.00	0.00	0.00
2.01 NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.011 INITIAL PRODUCTION FACILITIES (IPF)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.012 PRODUCTION BASE SUPPORT (PBS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.013 OTHER NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.02 RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.021 MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.022 RECURRING ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.023 SUSTAINING TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.024 QUALITY CONTROL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.025 OTHER RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.03 ENGINEERING CHANGES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.04 SYSTEM ENGNRNG/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.041 PROJECT MGMT ADMIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.05 SYSTEM TEST & EVALUATION, PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.06 TRAINING AIDS & EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.07 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.08 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.081 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.082 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.09 OPERATIONAL/SITE ACTIVATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.10 FIELDING	339.16	0.00	0.00	0.00	0.00	0.00	0.00
2.101 INITIAL DEPOT LEVEL REPARABLE (SPARES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.102 INITIAL CONSUMABLES (REPAIR PARTS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.103 INITIAL SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.104 TRANSPORTATION (EQUIPMENT TO UNIT)	339.16	0.00	0.00	0.00	0.00	0.00	0.00
2.105 NEW EQUIPMENT TRAINING (NET)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.106 CONTRACTOR LOGISTICS SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.11 TRAINING AMMUNITIONS/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.12 WAR RESERVE AMMUNITION/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.13 MODIFICATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.14 OTHER PROCUREMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.0 MILITARY CON-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.01 DEVELOPMENT CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.02 PRODUCTION CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.03 OPERATIONAL/SITE ACTIVATION CON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.04 OTHER MC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.0 MIL PERSONNEL-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.01 CREW	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.02 MAINTENANCE (MTOE)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.03 SYSTEM-SPECIFIC SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.04 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.041 PROJECT MGMT ADMIN (PM MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.05 REPLACEMENT PERSONNEL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.051 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.052 PERMANENT CHANGE OF STATION (PCS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.06 OTHER MP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.0 O&M-FUNDED ELEMENTS	1414.67	2017.88	2078.41	2140.72	2204.97	2271.16	2339.28
5.01 FIELD MAINTENANCE CIVILIAN LABOR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.02 SYSTEM-SPECIFIC BASE OPERATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.03 REPLEN DEPOT-LEVEL REPARABLE (SPARES)	97.62	139.22	143.40	147.69	152.13	156.69	161.39
5.04 REPLEN CONSUMABLES (REPAIR PARTS)	1054.25	1503.56	1548.67	1595.10	1642.97	1692.29	1743.05
5.05 PETROLEUM, OILS AND LUBRICANTS (POL)	253.80	361.97	372.83	384.01	395.53	407.40	419.62
5.06 END-ITEM SUPPLY AND MAINTENANCE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.061 OVERHAUL (PMN)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.062 INTEGRATED MATERIEL MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.063 SUPPLY DEPOT SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.064 INDUSTRIAL READINESS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.065 DEMILITARIZATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.07 TRANSPORTATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.08 SOFTWARE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.09 SYS TEST AND EVAL, OPERATIONAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.10 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	9.20	13.13	13.52	13.92	14.34	14.77	15.22
5.101 PROJ MGMT ADMIN (PM CIV)	9.20	13.13	13.52	13.92	14.34	14.77	15.22
5.102 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.11 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.12 OTHER O&M	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.0 DEFENSE BUS OPERATION FUND (DBOF) ELEM	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.01 CLASS IX WAR RESERVE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.02 OTHER DBOF	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS	1754.03	2017.88	2078.41	2140.72	2204.97	2271.16	2339.28

SRTRC - Baseline Cost Model - V1.2
Cost Totals by Year (Current Dollars) ($k)

COLLECT AND HAUL AWAY APPROACH FOR FORCE PROVIDER WASTEWATER — 06/21/96

	2008	2009	2010	2011	2012	2013	2014
1.0 RDT&E-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.01 DEVELOPMENT ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.02 PRODUCIBILITY ENGR AND PLAN (PEP)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.03 DEVELOPMENT TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.04 PROTOTYPE MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.05 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.051 PROJECT MGMT ADMIN (PM CIV/MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.052 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.06 SYSTEM TEST AND EVALUATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.07 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.08 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.09 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.091 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.092 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.10 DEVELOPMENT FACILITIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.11 OTHER RDT&E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.0 PROCUREMENT-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.01 NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.011 INITIAL PRODUCTION FACILITIES (IPF)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.012 PRODUCTION BASE SUPPORT (PBS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.013 OTHER NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.02 RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.021 MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.022 RECURRING ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.023 SUSTAINING TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.024 QUALITY CONTROL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.025 OTHER RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.03 ENGINEERING CHANGES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.04 SYSTEM ENGNRNG/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.041 PROJECT MGMT ADMIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.05 SYSTEM TEST & EVALUATION, PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.06 TRAINING AIDS & EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.07 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.08 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.081 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.082 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.09 OPERATIONAL/SITE ACTIVATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.10 FIELDING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.101 INITIAL DEPOT LEVEL REPARABLE (SPARES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.102 INITIAL CONSUMABLES (REPAIR PARTS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.103 INITIAL SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.104 TRANSPORTATION (EQUIPMENT TO UNIT)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.105 NEW EQUIPMENT TRAINING (NET)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.106 CONTRACTOR LOGISTICS SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.11 TRAINING AMMUNITIONS/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.12 WAR RESERVE AMMUNITION/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.13 MODIFICATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.14 OTHER PROCUREMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.0 MILITARY CON-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.01 DEVELOPMENT CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.02 PRODUCTION CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.03 OPERATIONAL/SITE ACTIVATION CON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.04 OTHER MC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.0 MIL PERSONNEL-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.01 CREW	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.02 MAINTENANCE (MTOE)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.03 SYSTEM-SPECIFIC SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.04 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.041 PROJECT MGMT ADMIN (PM MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.05 REPLACEMENT PERSONNEL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.051 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.052 PERMANENT CHANGE OF STATION (PCS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.06 OTHER MP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.0 O&M-FUNDED ELEMENTS	2409.50	2481.66	5372.84	5534.01	2711.86	2793.22	2877.01
5.01 FIELD MAINTENANCE CIVILIAN LABOR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.02 SYSTEM-SPECIFIC BASE OPERATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.03 REPLEN DEPOT-LEVEL REPARABLE (SPARES)	166.24	171.22	176.36	181.65	187.10	192.71	198.49
5.04 REPLEN CONSUMABLES (REPAIR PARTS)	1795.37	1849.14	1904.71	1961.85	2020.67	2081.29	2143.72
5.05 PETROLEUM, OILS AND LUBRICANTS (POL)	432.22	445.16	458.54	472.30	486.46	501.05	516.08
5.06 END-ITEM SUPPLY AND MAINTENANCE	0.00	0.00	2270.83	2338.95	0.00	0.00	0.00
5.061 OVERHAUL (PTM)	0.00	0.00	2270.83	2338.95	0.00	0.00	0.00
5.062 INTEGRATED MATERIEL MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.063 SUPPLY DEPOT SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.064 INDUSTRIAL READINESS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.065 DEMILITARIZATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.07 TRANSPORTATION	0.00	0.00	545.76	562.13	0.00	0.00	0.00
5.08 SOFTWARE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.09 SYS TEST AND EVAL, OPERATIONAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.10 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	15.67	16.14	16.63	17.13	17.64	18.17	18.71
5.101 PROJ MGMT ADMIN (PM CIV)	15.67	16.14	16.63	17.13	17.64	18.17	18.71
5.102 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.11 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.12 OTHER O&M	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.0 DEFNSE BUS OPERATION FUND (DBOF) ELEM	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.01 CLASS IX WAR RESERVE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.02 OTHER DBOF	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS	2409.50	2481.66	5372.84	5534.01	2711.86	2793.22	2877.01

BRTRC - Baseline Cost Model - v1.2
Cost Totals by Year (Current Dollars) ($k)

COLLECT AND HAUL AWAY APPROACH FOR FORCE PROVIDER WASTEWATER — 06/21/94

	2015	2016	2017	2018	2019	2020	2021
1.0 RDT&E-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.01 DEVELOPMENT ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.02 PRODUCIBILITY ENGR AND PLAN (PEP)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.03 DEVELOPMENT TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.04 PROTOTYPE MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.05 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.051 PROJECT MGMT ADMIN (PM CIV/MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.052 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.06 SYSTEM TEST AND EVALUATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.07 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.08 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.09 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.091 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.092 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.10 DEVELOPMENT FACILITIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.11 OTHER RDT&E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.0 PROCUREMENT-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.01 NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.011 INITIAL PRODUCTION FACILITIES (IPF)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.012 PRODUCTION BASE SUPPORT (PBS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.013 OTHER NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.02 RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.021 MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.022 RECURRING ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.023 SUSTAINING TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.024 QUALITY CONTROL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.025 OTHER RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.03 ENGINEERING CHANGES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.04 SYSTEM ENGNRNG/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.041 PROJECT MGMT ADMIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.05 SYSTEM TEST & EVALUATION, PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.06 TRAINING AIDS & EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.07 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.08 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.081 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.082 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.09 OPERATIONAL/SITE ACTIVATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.10 FIELDING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.101 INITIAL DEPOT LEVEL REPARABLE (SPARES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.102 INITIAL CONSUMABLES (REPAIR PARTS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.103 INITIAL SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.104 TRANSPORTATION (EQUIPMENT TO UNIT)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.105 NEW EQUIPMENT TRAINING (NET)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.106 CONTRACTOR LOGISTICS SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.11 TRAINING AMMUNITIONS/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.12 WAR RESERVE AMMUNITION/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.13 MODIFICATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.14 OTHER PROCUREMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.0 MILITARY CON-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.01 DEVELOPMENT CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.02 PRODUCTION CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.03 OPERATIONAL/SITE ACTIVATION CON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.04 OTHER MC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.0 MIL PERSONNEL-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.01 CREW	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.02 MAINTENANCE (MTOE)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.03 SYSTEM-SPECIFIC SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.04 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.041 PROJECT MGMT ADMIN (PM MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.05 REPLACEMENT PERSONNEL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.051 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.052 PERMANENT CHANGE OF STATION (PCS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.06 OTHER MP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.0 O&M-FUNDED ELEMENTS	2963.37	3052.16	3143.69	3238.12	3335.14	1908.61	982.96
5.01 FIELD MAINTENANCE CIVILIAN LABOR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.02 SYSTEM-SPECIFIC BASE OPERATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.03 REPLEN DEPOT-LEVEL REPARABLE (SPARES)	204.45	210.58	216.89	223.41	230.10	131.68	67.82
5.04 REPLEN CONSUMABLES (REPAIR PARTS)	2208.07	2274.23	2342.43	2412.80	2485.09	1422.15	732.43
5.05 PETROLEUM, OILS AND LUBRICANTS (POL)	531.57	547.50	563.92	580.86	598.26	342.37	176.33
5.06 END-ITEM SUPPLY AND MAINTENANCE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.061 OVERHAUL (PTM)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.062 INTEGRATED MATERIEL MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.063 SUPPLY DEPOT SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.064 INDUSTRIAL READINESS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.065 DEMILITARIZATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.07 TRANSPORTATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.08 SOFTWARE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.09 SYS TEST AND EVAL, OPERATIONAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.10 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	19.27	19.85	20.45	21.06	21.69	12.41	6.39
5.101 PROJ MGMT ADMIN (PM CIV)	19.27	19.85	20.45	21.06	21.69	12.41	6.39
5.102 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.11 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.12 OTHER O&M	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.0 DEFNSE BUS OPERATION FUND (DBOF) ELEM	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.01 CLASS IX WAR RESERVE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.02 OTHER DBOF	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS	2963.37	3052.16	3143.69	3238.12	3335.14	1908.61	982.96

BRTRC - Baseline Cost Model - V1.2
Cost Totals by Year (Current Dollars) ($k)

COLLECT AND HAUL AWAY APPROACH FOR FORCE PROVIDER WASTEWATER

06/21/94

	2022	2023	2024	2025	2026	2027	2028
1.0 RDT&E-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.01 DEVELOPMENT ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.02 PRODUCIBILITY ENGR AND PLAN (PEP)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.03 DEVELOPMENT TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.04 PROTOTYPE MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.05 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.051 PROJECT MGMT ADMIN (PM CIV/MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.052 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.06 SYSTEM TEST AND EVALUATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.07 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.08 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.09 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.091 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.092 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.10 DEVELOPMENT FACILITIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.11 OTHER RDT&E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.0 PROCUREMENT-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.01 NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.011 INITIAL PRODUCTION FACILITIES (IPF)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.012 PRODUCTION BASE SUPPORT (PBS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.013 OTHER NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.02 RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.021 MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.022 RECURRING ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.023 SUSTAINING TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.024 QUALITY CONTROL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.025 OTHER RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.03 ENGINEERING CHANGES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.04 SYSTEM ENGNRNG/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.041 PROJECT MGMT ADMIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.05 SYSTEM TEST & EVALUATION, PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.06 TRAINING AIDS & EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.07 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.08 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.081 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.082 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.09 OPERATIONAL/SITE ACTIVATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.10 FIELDING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.101 INITIAL DEPOT LEVEL REPARABLE (SPARES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.102 INITIAL CONSUMABLES (REPAIR PARTS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.103 INITIAL SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.104 TRANSPORTATION (EQUIPMENT TO UNIT)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.105 NEW EQUIPMENT TRAINING (NET)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.106 CONTRACTOR LOGISTICS SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.11 TRAINING AMMUNITIONS/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.12 WAR RESERVE AMMUNITION/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.13 MODIFICATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.14 OTHER PROCUREMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.0 MILITARY CON-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.01 DEVELOPMENT CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.02 PRODUCTION CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.03 OPERATIONAL/SITE ACTIVATION CON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.04 OTHER MC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.0 MIL PERSONNEL-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.01 CREW	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.02 MAINTENANCE (MTOE)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.03 SYSTEM-SPECIFIC SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.04 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.041 PROJECT MGMT ADMIN (PM MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.05 REPLACEMENT PERSONNEL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.051 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.052 PERMANENT CHANGE OF STATION (PCS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.06 OTHER MP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.0 O&M-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.01 FIELD MAINTENANCE CIVILIAN LABOR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.02 SYSTEM-SPECIFIC BASE OPERATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.03 REPLEN DEPOT-LEVEL REPARABLE (SPARES)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.04 REPLEN CONSUMABLES (REPAIR PARTS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.05 PETROLEUM, OILS AND LUBRICANTS (POL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.06 END-ITEM SUPPLY AND MAINTENANCE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.061 OVERHAUL (PTM)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.062 INTEGRATED MATERIEL MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.063 SUPPLY DEPOT SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.064 INDUSTRIAL READINESS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.065 DEMILITARIZATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.07 TRANSPORTATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.08 SOFTWARE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.09 SYS TEST AND EVAL, OPERATIONAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.10 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.101 PROJ MGMT ADMIN (PM CIV)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.102 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.11 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.12 OTHER O&M	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.0 DEFNSE BUS OPERATION FUND (DBOF) ELEM	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.01 CLASS IX WAR RESERVE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.02 OTHER DBOF	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS	0.00	0.00	0.00	0.00	0.00	0.00	0.00

APPENDIX E

DECISION COST ESTIMATE SUMMARY FOR PACKAGED WASTEWATER TREATMENT PLANT APPROACH

BRTRC - Baseline Cost Model - V1.2

ID: 1 Title: PACKAGED WASTEWATER TREATMENT PLANT FOR FORCE PROVIDER 06/27/94

First Year: 1995

DESCRIPTION: The Packaged Wastewater Treatment System will provide wastewater treatment to support one 550-soldier module of Force Provider.

The Force Provider package is a tent-based facility developed to give the front-line soldier a brief respite from the rigors of field operations in a combat theater. Specifically it is designed to provide each soldier with three hot meals a day, laundered clothing, environmentally controlled shelters, showers, modern latrines, and morale, welfare, and recreation facilities. Conceptually, Force Provider is similar to the US Air Force "Harvest" family of systems.

Force Provider will be air transportable, containerized, and modular in order to enhance its deployability, transportability, and flexibility. Each Force Provider package will contain all material necessary to provide food, billeting, and hygiene to 3,300 soldiers per rotation. It will be composed of six 550-soldier modules, with each module capable of independent operations. The separate modules of Force Provider are designed primarily for use in the division support area to provide rest and recuperation for forward deployed units. However, the modules may also be deployed along MSR's to provide convoy support and at aerial or sea Ports of Debarkation to facilitate force reception. In addition to these support missions in a theater of operations, Force Provider is also intended to support disaster relief and humanitarian missions. (Reference Operational Requirements Document (ORD) for Force Provider approved 23 June 1993, Section 1.a.)

In providing support in all these situations, Force Provider produces considerable volumes of wastewater from the showers, laundries, kitchen, and latrines. At present the preferred and most cost effective solution for handling this wastewater is through host nation support. Typically, the wastewater is introduced directly into local sewage systems or collected and hauled away by local contractors. When host nation support is not available, field expedient methods such as seepage pits are used. However, these methods are no longer considered adequate with respect to human health and the environment and are no longer allowed in the US and in certain foreign countries. In addition, Force Provider may also be used at remote sites and in less developed countries where local support does not exist and in disaster areas where wastewater treatment systems are damaged or overloaded. Consequently the Force Provider Combat Developer, the US Army Quartermaster Center and School (USAQMC&S), has identified a requirement for treating the wastewater generated by the Force Provider System to an environmentally safe level for local discharge. BRTRC is preparing a Best Technical Approach (BTA) to identify the best wastewater treatment method to meet the Combat Developer's requirements. This Decision Cost Estimate of a Packaged Wastewater Treatment System has been prepared to support the BTA.

TECHNICAL:
This decision cost estimate was developed in support of the Best Technical Approach Analysis (BTA) for the Force Provider Wastewater Treatment System. The specific plant used for costing purposes in this estimate was the Waterworks Purepac 40-ISO-STF produced by Waterworks Technologies, 1601 Westmount Road NW, Calgary, Alberta, Canada.

	Primary POC	Other POC
POC:	Drew Downing	Capt. Simon Nour
Organization:	MOBILITY TECH CTR BELVOIR	MOBILITY TECH CTR BELVOIR
Office symbol:	AMSTA-R8WE	AMSTA-R8WE
Comm phone:	(703) 704-3352	(703) 704-3357
DSN:	654-3352	654-3357
FAX:	(703) 704-3360	(703) 704-3360

ASSUMPTIONS - PACKAGED WASTEWATER TREATMENT PLANT TO SUPPORT FORCE PROVIDER

1. All costs are in thousands of FY 1995 dollars, with inflation applied in accordance with Hq Army Materiel Command (AMCRM-E) Memo, Subject: Inflation Guidance dated 7 February 1994.

2. The Operational Requirements Document for the Force Provider plans Initial Procurement for FY 1995 and Initial Operational Capability (IOC) in FY 1996. The Wastewater Treatment System is identified as a Preplanned Product Improvement (P3I) but should follow the Force Provider with minimum delay. Consequently this Decision Cost Estimate assumes a modified NDI Acquisition Strategy with a Milestone I/II in FY 1996, an abbreviated EMD leading to Milestone III at the end of FY 1997, manufacture in FY98 and FY99, and fielding in FY 2000. This is a compressed schedule which depends on availability of equipment and acceptable commercial data and assumes a minimum of matrix support. The requirement is for one unit for each of the Force Provider modules for a total of 36 units. The system is anticipated to have a useful life of 20 years.

3. Based on the schedule and requirements above, system costs for this Decision Cost Estimate are allocated across the life cycle cost years based on the following quantities:

Year	Production Quantity	Fielding Quantity	Sustainment Quantity
1998	2		
1999	34		
2000		36	
2001			36
2002			36
2003			36
2004			36
2005			36
2006			36
2007			36
2008			36
2009			36
2010			36
2011			36
2012			36
2013			36
2014			36
2015			36
2016			36
2017			36
2018			36
2019			36

2020			36
2021			0
Σ	36	36	720 plant-yrs

4. Initial Deployment of the Force Provider Wastewater Treatment System will be entirely within CONUS.

ORGANIZATION OF DECISION COST ESTIMATE

This Decision Cost Estimate is composed of three parts as follows:

1. This Introduction.

2. Four Cost Matrices:
    a. Cost Totals by Phase in Constant Dollars
    b. Cost Totals by Phase in Current Dollars
    c. Cost Totals by Year in Constant Dollars
    d. Cost Totals by Year in Current Dollars

3. Cost Data Sheets and Variable Information Sheets arranged by cost category:
    1. RDT&E
    2. Procurement
    3. Construction (No Costs)
    4. Military Personnel (No Costs)
    5. O&M

MAJOR DIFFERENCES FROM BASELINE OR TOTAL LIFE CYCLE COST ESTIMATES

This Decision Cost Estimate was developed to support the Best Technical Approach (BTA) Analysis for the Force Provider Wastewater Treatment System. It differs from a Program Office Life Cycle Cost Estimate (POLCCE) or Baseline Cost Estimate for the system in two important respects:

1. Sunk costs are excluded.

2. Military Personnel Costs are excluded in accordance with Draft TRADOC Pamphlet 11-8, Para 3-2.c.1 (page 25).

BRTRC - Baseline Cost Model - V1.2
Cost Totals by Phase (Constant Dollars) ($k)

PACKAGED WASTEWATER TREATMENT PLANT FOR FORCE PROVIDER 06/27/94

	Total	Phase I	Phase II	Phase III	Subsys 3	Subsys 4	Subsys 5
1.0 RDT&E-FUNDED ELEMENTS	3532.23	3532.23					
1.01 DEVELOPMENT ENGINEERING	2233.50	2233.50					
1.02 PRODUCIBILITY ENGR AND PLAN (PEP)	0.00	0.00					
1.03 DEVELOPMENT TOOLING	0.00	0.00					
1.04 PROTOTYPE MANUFACTURING	202.31	202.31					
1.05 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	750.00	750.00					
1.051 PROJECT MGMT ADMIN (PM CIV/MIL)	750.00	750.00					
1.052 OTHER	0.00	0.00					
1.06 SYSTEM TEST AND EVALUATION	242.54	242.54					
1.07 TRAINING	45.92	45.92					
1.08 DATA	57.96	57.96					
1.09 SUPPORT EQUIPMENT	0.00	0.00					
1.091 PECULIAR	0.00	0.00					
1.092 COMMON	0.00	0.00					
1.10 DEVELOPMENT FACILITIES	0.00	0.00					
1.11 OTHER RDT&E	0.00	0.00					
2.0 PROCUREMENT-FUNDED ELEMENTS	4779.72	4779.72					
2.01 NON-RECURRING PRODUCTION	0.00	0.00					
2.011 INITIAL PRODUCTION FACILITIES (IPF)	0.00	0.00					
2.012 PRODUCTION BASE SUPPORT (PBS)	0.00	0.00					
2.013 OTHER NON-RECURRING PRODUCTION	0.00	0.00					
2.02 RECURRING PRODUCTION	3131.22	3131.22					
2.021 MANUFACTURING	2920.97	2920.97					
2.022 RECURRING ENGINEERING	210.25	210.25					
2.023 SUSTAINING TOOLING	0.00	0.00					
2.024 QUALITY CONTROL	0.00	0.00					
2.025 OTHER RECURRING PRODUCTION	0.00	0.00					
2.03 ENGINEERING CHANGES	87.63	87.63					
2.04 SYSTEM ENGNRNG/PROGRAM MANAGEMENT	200.00	200.00					
2.041 PROJECT MGMT ADMIN	200.00	200.00					
2.042 OTHER	0.00	0.00					
2.05 SYSTEM TEST & EVALUATION, PRODUCTION	117.31	117.31					
2.06 TRAINING AIDS & EQUIPMENT	0.00	0.00					
2.07 DATA	819.78	819.78					
2.08 SUPPORT EQUIPMENT	0.00	0.00					
2.081 PECULIAR	0.00	0.00					
2.082 COMMON	0.00	0.00					
2.09 OPERATIONAL/SITE ACTIVATION	0.00	0.00					
2.10 FIELDING	423.78	423.78					
2.101 INITIAL DEPOT LEVEL REPARABLE (SPARES	146.05	146.05					
2.102 INITIAL CONSUMABLES (REPAIR PARTS)	146.05	146.05					
2.103 INITIAL SUPPORT EQUIPMENT	0.00	0.00					
2.104 TRANSPORTATION (EQUIPMENT TO UNIT)	119.88	119.88					
2.105 NEW EQUIPMENT TRAINING (NET)	11.81	11.81					
2.106 CONTRACTOR LOGISTICS SUPPORT	0.00	0.00					
2.11 TRAINING AMMUNITIONS/MISSILES	0.00	0.00					
2.12 WAR RESERVE AMMUNITION/MISSILES	0.00	0.00					
2.13 MODIFICATIONS	0.00	0.00					
2.14 OTHER PROCUREMENT	0.00	0.00					
3.0 MILITARY CON-FUNDED ELEMENTS	0.00	0.00					
3.01 DEVELOPMENT CONSTRUCTION	0.00	0.00					
3.02 PRODUCTION CONSTRUCTION	0.00	0.00					
3.03 OPERATIONAL/SITE ACTIVATION CON	0.00	0.00					
3.04 OTHER MC	0.00	0.00					
4.0 MIL PERSONNEL-FUNDED ELEMENTS	0.00	0.00					
4.01 CREW	0.00	0.00					
4.02 MAINTENANCE (MTOE)	0.00	0.00					
4.03 SYSTEM-SPECIFIC SUPPORT	0.00	0.00					
4.04 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00					
4.041 PROJECT MGMT ADMIN (PM MIL)	0.00	0.00					
4.042 OTHER	0.00	0.00					
4.05 REPLACEMENT PERSONNEL	0.00	0.00					
4.051 TRAINING	0.00	0.00					
4.052 PERMANENT CHANGE OF STATION (PCS)	0.00	0.00					
4.06 OTHER MP	0.00	0.00					
5.0 O&M-FUNDED ELEMENTS	3836.36	3836.36					
5.01 FIELD MAINTENANCE CIVILIAN LABOR	0.00	0.00					
5.02 SYSTEM-SPECIFIC BASE OPERATIONS	0.00	0.00					
5.03 REPLEN DEPOT-LEVEL REPARABLE (SPARES)	1460.48	1460.48					
5.04 REPLEN CONSUMABLES (REPAIR PARTS)	1460.48	1460.48					
5.05 PETROLEUM, OILS AND LUBRICANTS (POL)	715.39	715.39					
5.06 END-ITEM SUPPLY AND MAINTENANCE	0.00	0.00					
5.061 OVERHAUL (PTM)	0.00	0.00					
5.062 INTEGRATED MATERIEL MANAGEMENT	0.00	0.00					
5.063 SUPPLY DEPOT SUPPORT	0.00	0.00					
5.064 INDUSTRIAL READINESS	0.00	0.00					
5.065 DEMILITARIZATION	0.00	0.00					
5.07 TRANSPORTATION	0.00	0.00					
5.08 SOFTWARE	0.00	0.00					
5.09 SYS TEST AND EVAL, OPERATIONAL	0.00	0.00					
5.10 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	200.00	200.00					
5.101 PROJ MGMT ADMIN (PM CIV)	200.00	200.00					
5.102 OTHER	0.00	0.00					
5.11 TRAINING	0.00	0.00					
5.12 OTHER O&M	0.00	0.00					
6.0 DEFNSE BUS OPERATION FUND (DBOF) ELEM	0.00	0.00					
6.01 CLASS IX WAR RESERVE	0.00	0.00					
6.02 OTHER DBOF	0.00	0.00					
TOTALS	12148.31	12148.31					

BATTELLE - Baseline Cost Model - V1.2
Cost Totals by Phase (Current Dollars) ($k)

PACKAGED WASTEWATER TREATMENT PLANT FOR FORCE PROVIDER — 06/27/94

	Total	Phase I	Phase II	Phase III	Subsys 3	Subsys 4	Subsys 5
1.0 RDT&E-FUNDED ELEMENTS	3749.21	3749.21					
1.01 DEVELOPMENT ENGINEERING	2373.67	2373.67					
1.02 PRODUCIBILITY ENGR AND PLAN (PEP)	0.00	0.00					
1.03 DEVELOPMENT TOOLING	0.00	0.00					
1.04 PROTOTYPE MANUFACTURING	213.50	213.50					
1.05 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	796.44	796.44					
1.051 PROJECT MGMT ADMIN (PM CIV/MIL)	796.44	796.44					
1.052 OTHER	0.00	0.00					
1.06 SYSTEM TEST AND EVALUATION	255.95	255.95					
1.07 TRAINING	48.46	48.46					
1.08 DATA	61.19	61.19					
1.09 SUPPORT EQUIPMENT	0.00	0.00					
1.091 PECULIAR	0.00	0.00					
1.092 COMMON	0.00	0.00					
1.10 DEVELOPMENT FACILITIES	0.00	0.00					
1.11 OTHER RDT&E	0.00	0.00					
2.0 PROCUREMENT-FUNDED ELEMENTS	5514.21	5514.21					
2.01 NON-RECURRING PRODUCTION	0.00	0.00					
2.011 INITIAL PRODUCTION FACILITIES (IPF)	0.00	0.00					
2.012 PRODUCTION BASE SUPPORT (PBS)	0.00	0.00					
2.013 OTHER NON-RECURRING PRODUCTION	0.00	0.00					
2.02 RECURRING PRODUCTION	3724.70	3724.70					
2.021 MANUFACTURING	3477.62	3477.62					
2.022 RECURRING ENGINEERING	247.08	247.08					
2.023 SUSTAINING TOOLING	0.00	0.00					
2.024 QUALITY CONTROL	0.00	0.00					
2.025 OTHER RECURRING PRODUCTION	0.00	0.00					
2.03 ENGINEERING CHANGES	102.98	102.98					
2.04 SYSTEM ENGNRNG/PROGRAM MANAGEMENT	242.08	242.08					
2.041 PROJECT MGMT ADMIN	242.08	242.08					
2.042 OTHER	0.00	0.00					
2.05 SYSTEM TEST & EVALUATION, PRODUCTION	117.31	117.31					
2.06 TRAINING AIDS & EQUIPMENT	0.00	0.00					
2.07 DATA	819.78	819.78					
2.08 SUPPORT EQUIPMENT	0.00	0.00					
2.081 PECULIAR	0.00	0.00					
2.082 COMMON	0.00	0.00					
2.09 OPERATIONAL/SITE ACTIVATION	0.00	0.00					
2.10 FIELDING	507.37	507.37					
2.101 INITIAL DEPOT LEVEL REPARABLE (SPARES	173.88	173.88					
2.102 INITIAL CONSUMABLES (REPAIR PARTS)	173.88	173.88					
2.103 INITIAL SUPPORT EQUIPMENT	0.00	0.00					
2.104 TRANSPORTATION (EQUIPMENT TO UNIT)	145.10	145.10					
2.105 NEW EQUIPMENT TRAINING (NET)	14.50	14.50					
2.106 CONTRACTOR LOGISTICS SUPPORT	0.00	0.00					
2.11 TRAINING AMMUNITIONS/MISSILES	0.00	0.00					
2.12 WAR RESERVE AMMUNITION/MISSILES	0.00	0.00					
2.13 MODIFICATIONS	0.00	0.00					
2.14 OTHER PROCUREMENT	0.00	0.00					
3.0 MILITARY CON-FUNDED ELEMENTS	0.00	0.00					
3.01 DEVELOPMENT CONSTRUCTION	0.00	0.00					
3.02 PRODUCTION CONSTRUCTION	0.00	0.00					
3.03 OPERATIONAL/SITE ACTIVATION CON	0.00	0.00					
3.04 OTHER MC	0.00	0.00					
4.0 MIL PERSONNEL-FUNDED ELEMENTS	0.00	0.00					
4.01 CREW	0.00	0.00					
4.02 MAINTENANCE (MTOE)	0.00	0.00					
4.03 SYSTEM-SPECIFIC SUPPORT	0.00	0.00					
4.04 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00					
4.041 PROJECT MGMT ADMIN (PM MIL)	0.00	0.00					
4.042 OTHER	0.00	0.00					
4.05 REPLACEMENT PERSONNEL	0.00	0.00					
4.051 TRAINING	0.00	0.00					
4.052 PERMANENT CHANGE OF STATION (PCS)	0.00	0.00					
4.06 OTHER MP	0.00	0.00					
5.0 O&M-FUNDED ELEMENTS	6255.11	6255.11					
5.01 FIELD MAINTENANCE CIVILIAN LABOR	0.00	0.00					
5.02 SYSTEM-SPECIFIC BASE OPERATIONS	0.00	0.00					
5.03 REPLEN DEPOT-LEVEL REPARABLE (SPARES)	2381.29	2381.29					
5.04 REPLEN CONSUMABLES (REPAIR PARTS)	2381.29	2381.29					
5.05 PETROLEUM, OILS AND LUBRICANTS (POL)	1166.43	1166.43					
5.06 END-ITEM SUPPLY AND MAINTENANCE	0.00	0.00					
5.061 OVERHAUL (PPM)	0.00	0.00					
5.062 INTEGRATED MATERIEL MANAGEMENT	0.00	0.00					
5.063 SUPPLY DEPOT SUPPORT	0.00	0.00					
5.064 INDUSTRIAL READINESS	0.00	0.00					
5.065 DEMILITARIZATION	0.00	0.00					
5.07 TRANSPORTATION	0.00	0.00					
5.08 SOFTWARE	0.00	0.00					
5.09 SYS TEST AND EVAL, OPERATIONAL	0.00	0.00					
5.10 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	326.10	326.10					
5.101 PROJ MGMT ADMIN (PM CIV)	326.10	326.10					
5.102 OTHER	0.00	0.00					
5.11 TRAINING	0.00	0.00					
5.12 OTHER O&M	0.00	0.00					
6.0 DEFNSE BUS OPERATION FUND (DBOF) ELEM	0.00	0.00					
6.01 CLASS IX WAR RESERVE	0.00	0.00					
6.02 OTHER DBOF	0.00	0.00					
TOTALS	15518.53	15518.53					

BRTRC - Baseline Cost Model - V1.2
Cost Totals by Year (Constant Dollars) ($K)

PACKAGED WASTEWATER TREATMENT PLANT FOR FORCE PROVIDER — 06/27/94

	Total	1995	1996	1997	1998	1999	2000
1.0 RDT&E-FUNDED ELEMENTS	3532.23	575.41	1723.79	1233.02	0.00	0.00	0.00
1.01 DEVELOPMENT ENGINEERING	2233.50	406.09	913.70	913.70	0.00	0.00	0.00
1.02 PRODUCIBILITY ENGR AND PLAN (PEP)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.03 DEVELOPMENT TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.04 PROTOTYPE MANUFACTURING	202.31	0.00	202.31	0.00	0.00	0.00	0.00
1.05 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	750.00	150.00	300.00	300.00	0.00	0.00	0.00
1.051 PROJECT MGMT ADMIN (PM CIV/MIL)	750.00	150.00	300.00	300.00	0.00	0.00	0.00
1.052 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.06 SYSTEM TEST AND EVALUATION	242.54	0.00	242.54	0.00	0.00	0.00	0.00
1.07 TRAINING	45.92	0.00	45.92	0.00	0.00	0.00	0.00
1.08 DATA	57.96	19.32	19.32	19.32	0.00	0.00	0.00
1.09 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.091 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.092 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.10 DEVELOPMENT FACILITIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.11 OTHER RDT&E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.0 PROCUREMENT-FUNDED ELEMENTS	4779.72	0.00	0.00	0.00	444.77	4163.21	171.75
2.01 NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.011 INITIAL PRODUCTION FACILITIES (IPF)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.012 PRODUCTION BASE SUPPORT (PBS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.013 OTHER NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.02 RECURRING PRODUCTION	3131.22	0.00	0.00	0.00	267.41	2863.80	0.00
2.021 MANUFACTURING	2920.97	0.00	0.00	0.00	162.29	2758.68	0.00
2.022 RECURRING ENGINEERING	210.25	0.00	0.00	0.00	105.13	105.13	0.00
2.023 SUSTAINING TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.024 QUALITY CONTROL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.025 OTHER RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.03 ENGINEERING CHANGES	87.63	0.00	0.00	0.00	43.81	43.81	0.00
2.04 SYSTEM ENGNRNG/PROGRAM MANAGEMENT	200.00	0.00	0.00	0.00	0.00	100.00	100.00
2.041 PROJECT MGMT ADMIN	200.00	0.00	0.00	0.00	0.00	100.00	100.00
2.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.05 SYSTEM TEST & EVALUATION, PRODUCTION	117.31	0.00	0.00	0.00	117.31	0.00	0.00
2.06 TRAINING AIDS & EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.07 DATA	819.78	0.00	0.00	0.00	0.00	819.78	0.00
2.08 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.081 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.082 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.09 OPERATIONAL/SITE ACTIVATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.10 FIELDING	423.78	0.00	0.00	0.00	16.22	335.81	71.75
2.101 INITIAL DEPOT LEVEL REPAIRABLE (SPARES	146.05	0.00	0.00	0.00	8.11	137.93	0.00
2.102 INITIAL CONSUMABLES (REPAIR PARTS)	146.05	0.00	0.00	0.00	8.11	137.93	0.00
2.103 INITIAL SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.104 TRANSPORTATION (EQUIPMENT TO UNIT)	119.88	0.00	0.00	0.00	0.00	59.94	59.94
2.105 NEW EQUIPMENT TRAINING (NET)	11.81	0.00	0.00	0.00	0.00	0.00	11.81
2.106 CONTRACTOR LOGISTICS SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.11 TRAINING AMMUNITIONS/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.12 WAR RESERVE AMMUNITION/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.13 MODIFICATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.14 OTHER PROCUREMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.0 MILITARY CON-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.01 DEVELOPMENT CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.02 PRODUCTION CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.03 OPERATIONAL/SITE ACTIVATION CON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.04 OTHER MC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.0 MIL PERSONNEL-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.01 CREW	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.02 MAINTENANCE (MTOE)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.03 SYSTEM-SPECIFIC SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.04 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.041 PROJECT MGMT ADMIN (PM MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.05 REPLACEMENT PERSONNEL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.051 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.052 PERMANENT CHANGE OF STATION (PCS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.06 OTHER MP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.0 O&M-FUNDED ELEMENTS	3333.36	0.00	0.00	0.00	0.00	0.00	0.00
5.01 FIELD MAINTENANCE CIVILIAN LABOR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.02 SYSTEM-SPECIFIC BASE OPERATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.03 REPLEN DEPOT-LEVEL REPAIRABLE (SPARES)	1460.48	0.00	0.00	0.00	0.00	0.00	0.00
5.04 REPLEN CONSUMABLES (REPAIR PARTS)	1460.48	0.00	0.00	0.00	0.00	0.00	0.00
5.05 PETROLEUM, OILS AND LUBRICANTS (POL)	715.39	0.00	0.00	0.00	0.00	0.00	0.00
5.06 END-ITEM SUPPLY AND MAINTENANCE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.061 OVERHAUL (PTM)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.062 INTEGRATED MATERIEL MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.063 SUPPLY DEPOT SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.064 INDUSTRIAL READINESS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.065 DEMILITARIZATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.07 TRANSPORTATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.08 SOFTWARE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.09 SYS TEST AND EVAL, OPERATIONAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.10 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	200.00	0.00	0.00	0.00	0.00	0.00	0.00
5.101 PROJ MGMT ADMIN (PM CIV)	200.00	0.00	0.00	0.00	0.00	0.00	0.00
5.102 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.11 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.12 OTHER O&M	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.0 DEFENSE BUS OPERATION FUND (DBOF) ELEM	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.01 CLASS IX WAR RESERVE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.02 OTHER DBOF	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS	12143.31	575.41	1723.79	1233.02	444.77	4163.21	171.75

BRTRC - Baseline Cost Model - V1.2
Cost Totals by Year (Constant Dollars) ($K)

PACKAGED WASTEWATER TREATMENT PLANT FOR FORCE PROVIDER 06/27/94

	2001	2002	2003	2004	2005	2006	2007
1.0 RDT&E-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.01 DEVELOPMENT ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.02 PRODUCIBILITY ENGR AND PLAN (PEP)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.03 DEVELOPMENT TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.04 PROTOTYPE MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.05 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.051 PROJECT MGMT ADMIN (PM CIV/MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.052 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.06 SYSTEM TEST AND EVALUATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.07 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.08 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.09 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.091 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.092 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.10 DEVELOPMENT FACILITIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.11 OTHER RDT&E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.0 PROCUREMENT-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.01 NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.011 INITIAL PRODUCTION FACILITIES (IPF)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.012 PRODUCTION BASE SUPPORT (PBS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.013 OTHER NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.02 RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.021 MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.022 RECURRING ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.023 SUSTAINING TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.024 QUALITY CONTROL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.025 OTHER RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.03 ENGINEERING CHANGES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.04 SYSTEM ENGNRNG/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.041 PROJECT MGMT ADMIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.05 SYSTEM TEST & EVALUATION, PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.06 TRAINING AIDS & EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.07 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.08 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.081 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.082 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.09 OPERATIONAL/SITE ACTIVATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.10 FIELDING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.101 INITIAL DEPOT LEVEL REPARABLE (SPARES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.102 INITIAL CONSUMABLES (REPAIR PARTS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.103 INITIAL SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.104 TRANSPORTATION (EQUIPMENT TO UNIT)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.105 NEW EQUIPMENT TRAINING (NET)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.106 CONTRACTOR LOGISTICS SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.11 TRAINING AMMUNITIONS/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.12 WAR RESERVE AMMUNITION/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.13 MODIFICATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.14 OTHER PROCUREMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.0 MILITARY CON FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.01 DEVELOPMENT CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.02 PRODUCTION CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.03 OPERATIONAL/SITE ACTIVATION CON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.04 OTHER MC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.0 MIL PERSONNEL-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.01 CREW	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.02 MAINTENANCE (MTOE)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.03 SYSTEM-SPECIFIC SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.04 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.041 PROJECT MGMT ADMIN (PM MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.05 REPLACEMENT PERSONNEL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.051 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.052 PERMANENT CHANGE OF STATION (PCS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.06 OTHER MP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.0 O&M-FUNDED ELEMENTS	191.82	191.82	191.82	191.82	191.82	191.82	191.82
5.01 FIELD MAINTENANCE CIVILIAN LABOR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.02 SYSTEM-SPECIFIC BASE OPERATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.03 REPLEN DEPOT-LEVEL REPARABLE (SPARES)	73.02	73.02	73.02	73.02	73.02	73.02	73.02
5.04 REPLEN CONSUMABLES (REPAIR PARTS)	73.02	73.02	73.02	73.02	73.02	73.02	73.02
5.05 PETROLEUM, OILS AND LUBRICANTS (POL)	35.77	35.77	35.77	35.77	35.77	35.77	35.77
5.06 END-ITEM SUPPLY AND MAINTENANCE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.061 OVERHAUL (PTM)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.062 INTEGRATED MATERIEL MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.063 SUPPLY DEPOT SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.064 INDUSTRIAL READINESS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.065 DEMILITARIZATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.07 TRANSPORTATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.08 SOFTWARE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.09 SYS TEST AND EVAL, OPERATIONAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.10 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	10.00	10.00	10.00	10.00	10.00	10.00	10.00
5.101 PROJ MGMT ADMIN (PM CIV)	10.00	10.00	10.00	10.00	10.00	10.00	10.00
5.102 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.11 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.12 OTHER O&M	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.0 DEFNSE BUS OPERATION FUND (DBOF) ELEM	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.01 CLASS IX WAR RESERVE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.02 OTHER DBOF	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS	191.82	191.82	191.82	191.82	191.82	191.82	191.82

BRTRC - Baseline Cost Model - V1.2
Cost Totals by Year (Constant Dollars) ($k)

PACKAGED WASTEWATER TREATMENT PLANT FOR FORCE PROVIDER — 06/27/96

	2008	2009	2010	2011	2012	2013	2014
1.0 RDT&E-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.01 DEVELOPMENT ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.02 PRODUCIBILITY ENGR AND PLAN (PEP)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.03 DEVELOPMENT TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.04 PROTOTYPE MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.05 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.051 PROJECT MGMT ADMIN (PM CIV/MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.052 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.06 SYSTEM TEST AND EVALUATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.07 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.08 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.09 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.091 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.092 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.10 DEVELOPMENT FACILITIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.11 OTHER RDT&E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.0 PROCUREMENT-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.01 NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.011 INITIAL PRODUCTION FACILITIES (IPF)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.012 PRODUCTION BASE SUPPORT (PBS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.013 OTHER NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.02 RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.021 MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.022 RECURRING ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.023 SUSTAINING TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.024 QUALITY CONTROL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.025 OTHER RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.03 ENGINEERING CHANGES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.04 SYSTEM ENGNRNG/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.041 PROJECT MGMT ADMIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.05 SYSTEM TEST & EVALUATION, PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.06 TRAINING AIDS & EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.07 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.08 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.081 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.082 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.09 OPERATIONAL/SITE ACTIVATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.10 FIELDING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.101 INITIAL DEPOT LEVEL REPARABLE (SPARES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.102 INITIAL CONSUMABLES (REPAIR PARTS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.103 INITIAL SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.104 TRANSPORTATION (EQUIPMENT TO UNIT)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.105 NEW EQUIPMENT TRAINING (NET)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.106 CONTRACTOR LOGISTICS SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.11 TRAINING AMMUNITIONS/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.12 WAR RESERVE AMMUNITION/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.13 MODIFICATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.14 OTHER PROCUREMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.0 MILITARY CON-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.01 DEVELOPMENT CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.02 PRODUCTION CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.03 OPERATIONAL/SITE ACTIVATION CON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.04 OTHER MC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.0 MIL PERSONNEL-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.01 CREW	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.02 MAINTENANCE (MTOE)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.03 SYSTEM-SPECIFIC SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.04 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.041 PROJECT MGMT ADMIN (PM MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.05 REPLACEMENT PERSONNEL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.051 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.052 PERMANENT CHANGE OF STATION (PCS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.06 OTHER MP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.0 O&M-FUNDED ELEMENTS	191.82	191.82	191.82	191.82	191.82	191.82	191.82
5.01 FIELD MAINTENANCE CIVILIAN LABOR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.02 SYSTEM-SPECIFIC BASE OPERATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.03 REPLEN DEPOT-LEVEL REPARABLE (SPARES)	73.02	73.02	73.02	73.02	73.02	73.02	73.02
5.04 REPLEN CONSUMABLES (REPAIR PARTS)	73.02	73.02	73.02	73.02	73.02	73.02	73.02
5.05 PETROLEUM, OILS AND LUBRICANTS (POL)	35.77	35.77	35.77	35.77	35.77	35.77	35.77
5.06 END-ITEM SUPPLY AND MAINTENANCE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.061 OVERHAUL (PMI)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.062 INTEGRATED MATERIEL MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.063 SUPPLY DEPOT SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.064 INDUSTRIAL READINESS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.065 DEMILITARIZATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.07 TRANSPORTATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.08 SOFTWARE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.09 SYS TEST AND EVAL, OPERATIONAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.10 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	10.00	10.00	10.00	10.00	10.00	10.00	10.00
5.101 PROJ MGMT ADMIN (PM CIV)	10.00	10.00	10.00	10.00	10.00	10.00	10.00
5.102 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.11 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.12 OTHER O&M	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.0 DEFENSE BUS OPERATION FUND (DBOF) ELEM	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.01 CLASS IX WAR RESERVE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.02 OTHER DBOF	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS	191.82	191.82	191.82	191.82	191.82	191.82	191.82

BRTRC - Baseline Cost Model - V1.2
Cost Totals by Year (Constant Dollars) ($k)

PACKAGED WASTEWATER TREATMENT PLANT FOR FORCE PROVIDER — 06/27/94

	2015	2016	2017	2018	2019	2020	2021
1.0 RDT&E-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.01 DEVELOPMENT ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.02 PRODUCIBILITY ENGR AND PLAN (PEP)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.03 DEVELOPMENT TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.04 PROTOTYPE MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.05 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.051 PROJECT MGMT ADMIN (PM CIV/MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.052 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.06 SYSTEM TEST AND EVALUATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.07 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.08 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.09 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.091 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.092 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.10 DEVELOPMENT FACILITIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.11 OTHER RDT&E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.0 PROCUREMENT-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.01 NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.011 INITIAL PRODUCTION FACILITIES (IPF)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.012 PRODUCTION BASE SUPPORT (PBS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.013 OTHER NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.02 RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.021 MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.022 RECURRING ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.023 SUSTAINING TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.024 QUALITY CONTROL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.025 OTHER RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.03 ENGINEERING CHANGES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.04 SYSTEM ENGNRNG/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.041 PROJECT MGMT ADMIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.05 SYSTEM TEST & EVALUATION, PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.06 TRAINING AIDS & EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.07 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.08 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.081 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.082 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.09 OPERATIONAL/SITE ACTIVATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.10 FIELDING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.101 INITIAL DEPOT LEVEL REPARABLE (SPARES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.102 INITIAL CONSUMABLES (REPAIR PARTS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.103 INITIAL SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.104 TRANSPORTATION (EQUIPMENT TO UNIT)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.105 NEW EQUIPMENT TRAINING (NET)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.106 CONTRACTOR LOGISTICS SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.11 TRAINING AMMUNITIONS/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.12 WAR RESERVE AMMUNITION/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.13 MODIFICATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.14 OTHER PROCUREMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.0 MILITARY CON-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.01 DEVELOPMENT CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.02 PRODUCTION CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.03 OPERATIONAL/SITE ACTIVATION CON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.04 OTHER MC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.0 MIL PERSONNEL-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.01 CREW	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.02 MAINTENANCE (MTOE)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.03 SYSTEM-SPECIFIC SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.04 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.041 PROJECT MGMT ADMIN (PM MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.05 REPLACEMENT PERSONNEL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.051 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.052 PERMANENT CHANGE OF STATION (PCS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.06 OTHER MP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.0 O&M-FUNDED ELEMENTS	191.82	191.82	191.82	191.82	191.82	191.82	0.00
5.01 FIELD MAINTENANCE CIVILIAN LABOR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.02 SYSTEM-SPECIFIC BASE OPERATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.03 REPLEN DEPOT-LEVEL REPARABLE (SPARES)	73.02	73.02	73.02	73.02	73.02	73.02	0.00
5.04 REPLEN CONSUMABLES (REPAIR PARTS)	73.02	73.02	73.02	73.02	73.02	73.02	0.00
5.05 PETROLEUM, OILS AND LUBRICANTS (POL)	35.77	35.77	35.77	35.77	35.77	35.77	0.00
5.06 END-ITEM SUPPLY AND MAINTENANCE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.061 OVERHAUL (PTM)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.062 INTEGRATED MATERIEL MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.063 SUPPLY DEPOT SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.064 INDUSTRIAL READINESS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.065 DEMILITARIZATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.07 TRANSPORTATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.08 SOFTWARE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.09 SYS TEST AND EVAL, OPERATIONAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.10 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	10.00	10.00	10.00	10.00	10.00	10.00	0.00
5.101 PROJ MGMT ADMIN (PM CIV)	10.00	10.00	10.00	10.00	10.00	10.00	0.00
5.102 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.11 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.12 OTHER O&M	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.0 DEFENSE BUS OPERATION FUND (DBOF) ELEM	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.01 CLASS IX WAR RESERVE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.02 OTHER DBOF	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS	191.82	191.82	191.82	191.82	191.82	191.82	0.00

BRTRC - Baseline Cost Model - V1.2
Cost Totals by Year (Current Dollars) ($k)

PACKAGED WASTEWATER TREATMENT PLANT FOR FORCE PROVIDER — 06/27/94

	Total	1995	1996	1997	1998	1999	2000
1.0 RDT&E-FUNDED ELEMENTS	3749.21	589.80	1819.12	1340.29	0.00	0.00	0.00
1.01 DEVELOPMENT ENGINEERING	2373.67	416.25	964.23	993.19	0.00	0.00	0.00
1.02 PRODUCIBILITY ENGR AND PLAN (PEP)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.03 DEVELOPMENT TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.04 PROTOTYPE MANUFACTURING	213.50	0.00	213.50	0.00	0.00	0.00	0.00
1.05 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	796.44	153.75	316.59	326.10	0.00	0.00	0.00
1.051 PROJECT MGMT ADMIN (PM CIV/MIL)	796.44	153.75	316.59	326.10	0.00	0.00	0.00
1.052 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.06 SYSTEM TEST AND EVALUATION	255.95	0.00	255.95	0.00	0.00	0.00	0.00
1.07 TRAINING	48.46	0.00	48.46	0.00	0.00	0.00	0.00
1.08 DATA	61.19	19.80	20.39	21.00	0.00	0.00	0.00
1.09 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.091 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.092 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.10 DEVELOPMENT FACILITIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.11 OTHER RDT&E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.0 PROCUREMENT-FUNDED ELEMENTS	5514.21	0.00	0.00	0.00	496.44	4806.82	210.96
2.01 NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.011 INITIAL PRODUCTION FACILITIES (IPF)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.012 PRODUCTION BASE SUPPORT (PBS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.013 OTHER NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.02 RECURRING PRODUCTION	3724.70	0.00	0.00	0.00	309.61	3415.09	0.00
2.021 MANUFACTURING	3477.62	0.00	0.00	0.00	187.90	3289.72	0.00
2.022 RECURRING ENGINEERING	247.08	0.00	0.00	0.00	121.71	125.36	0.00
2.023 SUSTAINING TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.024 QUALITY CONTROL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.025 OTHER RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.03 ENGINEERING CHANGES	102.98	0.00	0.00	0.00	50.73	52.25	0.00
2.04 SYSTEM ENGNRNG/PROGRAM MANAGEMENT	242.08	0.00	0.00	0.00	0.00	119.25	122.83
2.041 PROJECT MGMT ADMIN	242.08	0.00	0.00	0.00	0.00	119.25	122.83
2.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.05 SYSTEM TEST & EVALUATION, PRODUCTION	117.31	0.00	0.00	0.00	117.31	0.00	0.00
2.06 TRAINING AIDS & EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.07 DATA	819.78	0.00	0.00	0.00	0.00	819.78	0.00
2.08 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.081 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.082 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.09 OPERATIONAL/SITE ACTIVATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.10 FIELDING	507.37	0.00	0.00	0.00	18.79	400.45	88.13
2.101 INITIAL DEPOT LEVEL REPARABLE (SPARES	173.88	0.00	0.00	0.00	9.39	164.49	0.00
2.102 INITIAL CONSUMABLES (REPAIR PARTS)	173.88	0.00	0.00	0.00	9.39	164.49	0.00
2.103 INITIAL SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.104 TRANSPORTATION (EQUIPMENT TO UNIT)	145.10	0.00	0.00	0.00	0.00	71.48	73.62
2.105 NEW EQUIPMENT TRAINING (NET)	14.50	0.00	0.00	0.00	0.00	0.00	14.50
2.106 CONTRACTOR LOGISTICS SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.11 TRAINING AMMUNITIONS/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.12 WAR RESERVE AMMUNITION/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.13 MODIFICATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.14 OTHER PROCUREMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.0 MILITARY CON-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.01 DEVELOPMENT CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.02 PRODUCTION CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.03 OPERATIONAL/SITE ACTIVATION CON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.04 OTHER MC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.0 MIL PERSONNEL-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.01 CREW	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.02 MAINTENANCE (MTOE)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.03 SYSTEM-SPECIFIC SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.04 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.041 PROJECT MGMT ADMIN (PM MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.05 REPLACEMENT PERSONNEL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.051 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.052 PERMANENT CHANGE OF STATION (PCS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.06 OTHER MP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.0 O&M-FUNDED ELEMENTS	6255.11	0.00	0.00	0.00	0.00	0.00	0.00
5.01 FIELD MAINTENANCE CIVILIAN LABOR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.02 SYSTEM-SPECIFIC BASE OPERATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.03 REPLEN DEPOT-LEVEL REPARABLE (SPARES)	2381.29	0.00	0.00	0.00	0.00	0.00	0.00
5.04 REPLEN CONSUMABLES (REPAIR PARTS)	2381.29	0.00	0.00	0.00	0.00	0.00	0.00
5.05 PETROLEUM, OILS AND LUBRICANTS (POL)	1166.43	0.00	0.00	0.00	0.00	0.00	0.00
5.06 END-ITEM SUPPLY AND MAINTENANCE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.061 OVERHAUL (PTM)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.062 INTEGRATED MATERIEL MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.063 SUPPLY DEPOT SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.064 INDUSTRIAL READINESS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.065 DEMILITARIZATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.07 TRANSPORTATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.08 SOFTWARE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.09 SYS TEST AND EVAL, OPERATIONAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.10 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	326.10	0.00	0.00	0.00	0.00	0.00	0.00
5.101 PROJ MGMT ADMIN (PM CIV)	326.10	0.00	0.00	0.00	0.00	0.00	0.00
5.102 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.11 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.12 OTHER O&M	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.0 DEFNSE BUS OPERATION FUND (DBOF) ELEM	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.01 CLASS IX WAR RESERVE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.02 OTHER DBOF	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS	15518.53	589.80	1819.12	1340.29	496.44	4806.82	210.96

BRTRC - Baseline Cost Model - V1.2
Cost Totals by Year (Current Dollars) ($k)

PACKAGED WASTEWATER TREATMENT PLANT FOR FORCE PROVIDER — 06/27/94

	2001	2002	2003	2004	2005	2006	2007
1.0 RDT&E-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.01 DEVELOPMENT ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.02 PRODUCIBILITY ENGR AND PLAN (PEP)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.03 DEVELOPMENT TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.04 PROTOTYPE MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.05 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.051 PROJECT MGMT ADMIN (PM CIV/MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.052 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.06 SYSTEM TEST AND EVALUATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.07 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.08 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.09 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.091 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.092 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.10 DEVELOPMENT FACILITIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.11 OTHER RDT&E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.0 PROCUREMENT-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.01 NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.011 INITIAL PRODUCTION FACILITIES (IPF)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.012 PRODUCTION BASE SUPPORT (PBS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.013 OTHER NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.02 RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.021 MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.022 RECURRING ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.023 SUSTAINING TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.024 QUALITY CONTROL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.025 OTHER RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.03 ENGINEERING CHANGES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.04 SYSTEM ENGNRNG/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.041 PROJECT MGMT ADMIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.05 SYSTEM TEST & EVALUATION, PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.06 TRAINING AIDS & EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.07 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.08 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.081 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.082 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.09 OPERATIONAL/SITE ACTIVATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.10 FIELDING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.101 INITIAL DEPOT LEVEL REPARABLE (SPARES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.102 INITIAL CONSUMABLES (REPAIR PARTS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.103 INITIAL SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.104 TRANSPORTATION (EQUIPMENT TO UNIT)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.105 NEW EQUIPMENT TRAINING (NET)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.106 CONTRACTOR LOGISTICS SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.11 TRAINING AMMUNITIONS/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.12 WAR RESERVE AMMUNITION/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.13 MODIFICATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.14 OTHER PROCUREMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.0 MILITARY CON-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.01 DEVELOPMENT CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.02 PRODUCTION CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.03 OPERATIONAL/SITE ACTIVATION CON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.04 OTHER MC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.0 MIL PERSONNEL-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.01 CREW	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.02 MAINTENANCE (MTOE)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.03 SYSTEM-SPECIFIC SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.04 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.041 PROJECT MGMT ADMIN (PM MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.05 REPLACEMENT PERSONNEL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.051 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.052 PERMANENT CHANGE OF STATION (PCS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.06 OTHER MP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.0 O&M-FUNDED ELEMENTS	232.79	239.77	246.97	254.37	262.00	269.87	277.96
5.01 FIELD MAINTENANCE CIVILIAN LABOR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.02 SYSTEM-SPECIFIC BASE OPERATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.03 REPLEN DEPOT-LEVEL REPARABLE (SPARES)	88.62	91.28	94.02	96.84	99.74	102.74	105.82
5.04 REPLEN CONSUMABLES (REPAIR PARTS)	88.62	91.28	94.02	96.84	99.74	102.74	105.82
5.05 PETROLEUM, OILS AND LUBRICANTS (POL)	43.41	44.71	46.05	47.43	48.86	50.32	51.83
5.06 END-ITEM SUPPLY AND MAINTENANCE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.061 OVERHAUL (PTM)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.062 INTEGRATED MATERIEL MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.063 SUPPLY DEPOT SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.064 INDUSTRIAL READINESS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.065 DEMILITARIZATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.07 TRANSPORTATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.08 SOFTWARE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.09 SYS TEST AND EVAL, OPERATIONAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.10 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	12.14	12.50	12.88	13.26	13.66	14.07	14.49
5.101 PROJ MGMT ADMIN (PM CIV)	12.14	12.50	12.88	13.26	13.66	14.07	14.49
5.102 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.11 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.12 OTHER O&M	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.0 DEFNSE BUS OPERATION FUND (DBOF) ELEM	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.01 CLASS IX WAR RESERVE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.02 OTHER DBOF	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS	232.79	239.77	246.97	254.37	262.00	269.87	277.96

BATRC - Baseline Cost Model - V1.2
Cost Totals by Year (Current Dollars) ($k)

PACKAGED WASTEWATER TREATMENT PLANT FOR FORCE PROVIDER — 06/27/94

	2008	2009	2010	2011	2012	2013	2014
1.0 RDT&E-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.01 DEVELOPMENT ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.02 PRODUCIBILITY ENGR AND PLAN (PEP)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.03 DEVELOPMENT TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.04 PROTOTYPE MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.05 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.051 PROJECT MGMT ADMIN (PM CIV/MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.052 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.06 SYSTEM TEST AND EVALUATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.07 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.08 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.09 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.091 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.092 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.10 DEVELOPMENT FACILITIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.11 OTHER RDT&E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.0 PROCUREMENT-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.01 NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.011 INITIAL PRODUCTION FACILITIES (IPF)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.012 PRODUCTION BASE SUPPORT (PBS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.013 OTHER NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.02 RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.021 MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.022 RECURRING ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.023 SUSTAINING TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.024 QUALITY CONTROL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.025 OTHER RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.03 ENGINEERING CHANGES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.04 SYSTEM ENGNRNG/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.041 PROJECT MGMT ADMIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.05 SYSTEM TEST & EVALUATION, PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.06 TRAINING AIDS & EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.07 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.08 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.081 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.082 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.09 OPERATIONAL/SITE ACTIVATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.10 FIELDING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.101 INITIAL DEPOT LEVEL REPARABLE (SPARES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.102 INITIAL CONSUMABLES (REPAIR PARTS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.103 INITIAL SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.104 TRANSPORTATION (EQUIPMENT TO UNIT)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.105 NEW EQUIPMENT TRAINING (NET)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.106 CONTRACTOR LOGISTICS SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.11 TRAINING AMMUNITIONS/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.12 WAR RESERVE AMMUNITION/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.13 MODIFICATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.14 OTHER PROCUREMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.0 MILITARY CON-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.01 DEVELOPMENT CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.02 PRODUCTION CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.03 OPERATIONAL/SITE ACTIVATION CON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.04 OTHER MC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.0 MIL PERSONNEL-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.01 CREW	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.02 MAINTENANCE (MTOE)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.03 SYSTEM-SPECIFIC SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.04 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.041 PROJECT MGMT ADMIN (PM MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.05 REPLACEMENT PERSONNEL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.051 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.052 PERMANENT CHANGE OF STATION (PCS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.06 OTHER MP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.0 O&M-FUNDED ELEMENTS	286.31	294.88	303.74	312.86	322.24	331.90	341.86
5.01 FIELD MAINTENANCE CIVILIAN LABOR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.02 SYSTEM-SPECIFIC BASE OPERATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.03 REPLEN DEPOT-LEVEL REPARABLE (SPARES)	109.00	112.26	115.63	119.10	122.67	126.35	130.14
5.04 REPLEN CONSUMABLES (REPAIR PARTS)	109.00	112.26	115.63	119.10	122.67	126.35	130.14
5.05 PETROLEUM, OILS AND LUBRICANTS (POL)	53.39	54.99	56.64	58.34	60.09	61.89	63.75
5.06 END-ITEM SUPPLY AND MAINTENANCE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.061 OVERHAUL (PTM)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.062 INTEGRATED MATERIEL MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.063 SUPPLY DEPOT SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.064 INDUSTRIAL READINESS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.065 DEMILITARIZATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.07 TRANSPORTATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.08 SOFTWARE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.09 SYS TEST AND EVAL, OPERATIONAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.10 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	14.93	15.37	15.84	16.31	16.80	17.30	17.82
5.101 PROJ MGMT ADMIN (PM CIV)	14.93	15.37	15.84	16.31	16.80	17.30	17.82
5.102 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.11 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.12 OTHER O&M	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.0 DEFENSE BUS OPERATION [illegible] OBOF) ELEM	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.01 CLASS IX WAR RESERVE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.02 OTHER OBOF	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS	286.31	294.88	303.74	312.86	322.24	331.90	341.86

BRTRC - Baseline Cost Model - V1.2
Cost Totals by Year (Current Dollars) ($k)

PACKAGED WASTEWATER TREATMENT PLANT FOR FORCE PROVIDER 06/27/94

	2015	2016	2017	2018	2019	2020	2021
1.0 RDT&E-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.01 DEVELOPMENT ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.02 PRODUCIBILITY ENGR AND PLAN (PEP)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.03 DEVELOPMENT TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.04 PROTOTYPE MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.05 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.051 PROJECT MGMT ADMIN (PM CIV/MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.052 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.06 SYSTEM TEST AND EVALUATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.07 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.08 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.09 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.091 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.092 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.10 DEVELOPMENT FACILITIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.11 OTHER RDT&E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.0 PROCUREMENT-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.01 NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.011 INITIAL PRODUCTION FACILITIES (IPF)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.012 PRODUCTION BASE SUPPORT (PBS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.013 OTHER NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.02 RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.021 MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.022 RECURRING ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.023 SUSTAINING TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.024 QUALITY CONTROL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.025 OTHER RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.03 ENGINEERING CHANGES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.04 SYSTEM ENGNRNG/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.041 PROJECT MGMT ADMIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.05 SYSTEM TEST & EVALUATION, PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.06 TRAINING AIDS & EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.07 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.08 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.081 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.082 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.09 OPERATIONAL/SITE ACTIVATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.10 FIELDING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.101 INITIAL DEPOT LEVEL REPARABLE (SPARES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.102 INITIAL CONSUMABLES (REPAIR PARTS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.103 INITIAL SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.104 TRANSPORTATION (EQUIPMENT TO UNIT)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.105 NEW EQUIPMENT TRAINING (NET)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.106 CONTRACTOR LOGISTICS SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.11 TRAINING AMMUNITIONS/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.12 WAR RESERVE AMMUNITION/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.13 MODIFICATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.14 OTHER PROCUREMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.0 MILITARY CON-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.01 DEVELOPMENT CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.02 PRODUCTION CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.03 OPERATIONAL/SITE ACTIVATION CON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.04 OTHER MC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.0 MIL PERSONNEL-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.01 CREW	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.02 MAINTENANCE (MTOE)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.03 SYSTEM-SPECIFIC SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.04 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.041 PROJECT MGMT ADMIN (PM MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.05 REPLACEMENT PERSONNEL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.051 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.052 PERMANENT CHANGE OF STATION (PCS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.06 OTHER MP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.0 O&M-FUNDED ELEMENTS	352.12	362.67	373.55	384.77	396.30	408.19	0.00
5.01 FIELD MAINTENANCE CIVILIAN LABOR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.02 SYSTEM-SPECIFIC BASE OPERATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.03 REPLEN DEPOT-LEVEL REPARABLE (SPARES)	134.05	138.07	142.21	146.48	150.87	155.40	0.00
5.04 REPLEN CONSUMABLES (REPAIR PARTS)	134.05	138.07	142.21	146.48	150.87	155.40	0.00
5.05 PETROLEUM, OILS AND LUBRICANTS (POL)	65.66	67.63	69.66	71.75	73.90	76.12	0.00
5.06 END-ITEM SUPPLY AND MAINTENANCE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.061 OVERHAUL (PTM)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.062 INTEGRATED MATERIEL MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.063 SUPPLY DEPOT SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.064 INDUSTRIAL READINESS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.065 DEMILITARIZATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.07 TRANSPORTATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.08 SOFTWARE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.09 SYS TEST AND EVAL, OPERATIONAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.10 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	18.36	18.91	19.47	20.06	20.66	21.28	0.00
5.101 PROJ MGMT ADMIN (PM CIV)	18.36	18.91	19.47	20.06	20.66	21.28	0.00
5.102 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.11 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.12 OTHER O&M	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.0 DEFNSE BUS OPERATION FUND (DBOF) ELEM	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.01 CLASS IX WAR RESERVE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.02 OTHER DBOF	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS	352.12	362.67	373.55	384.77	396.30	408.19	0.00

APPENDIX F

DECISION COST ESTIMATE SUMMARY FOR DECISION COST ESTIMATE FOR OXIDATION POND OR LAGOON APPROACH

BRTRC - Baseline Cost Model - V1.2

ID: 1 Title: OXIDATION POND OR LAGOON FOR FORCE PROVIDER 05/13/94

First Year: 1995

DESCRIPTION: This approach involves the construction of an oxidation pond, stabilization pond, or sewage lagoon to support each 550-soldier module of Force Provider.

The Force Provider package is a tent-based facility developed to give the front-line soldier a brief respite from the rigors of field operations in a combat theater. Specifically it is designed to provide each soldier with three hot meals a day, laundered clothing, environmentally controlled shelters, showers, modern latrines, and morale, welfare, and recreation facilities. Conceptually, Force Provider is similar to the US Air Force "Harvest" family of systems.

Force Provider will be air transportable, containerized, and modular in order to enhance its deployability, transportability, and flexibility. Each Force Provider package will contain all material necessary to provide food, billeting, and hygiene to 5,300 soldiers per rotation. It will be composed of six 550-soldier modules, with each module capable of independent operations. The separate modules of Force Provider are designed primarily for use in the division support area to provide rest and recuperation for forward deployed units. However, the modules may also be deployed along MSR's to provide convoy support and at aerial or sea Ports of Debarkation to facilitate force reception. In addition to these support missions in a theater of operations, Force Provider is also intended to support disaster relief and humanitarian missions. (Reference Operational Requirements Document (ORD) for Force Provider approved 23 June 1993, Section 1.a.)

In providing support in all these situations, Force Provider produces considerable volumes of wastewater from the showers, laundries, kitchen, and latrines. At present the preferred and most cost effective solution for handling this wastewater is through host nation support. Typically, the wastewater is introduced directly into local sewage systems or collected and hauled away by local contractors. When host nation support is not available, field expedient methods such as seepage pits are used. However, these methods are no longer considered adequate with respect to human health and the environment and are no longer allowed in the US and in certain foreign countries. In addition, Force Provider may also be used at remote sites and in less developed countries where local support does not exist and in disaster areas where wastewater treatment systems are damaged or overloaded. Consequently the Force Provider Combat Developer, the US Army Quartermaster Center and School (USAQMC&S), has identified a requirement for treating the wastewater generated by the Force Provider System to an environmentally safe level for local discharge. BRTRC is preparing a Best Technical Approach (BTA) to identify the best wastewater treatment method to meet the Combat Developer's requirements. This Decision Cost Estimate of an Oxidation Pond or Sewage Lagoon has been prepared to support the BTA.

TECHNICAL:
The current edition of FM 5-163 Sewerage recommends oxidation ponds or sewage lagoons as the best general solution to the problem of wastewater treatment facilities in the Theater of Operations: "The sewage lagoon, applicable in all but extreme arctic regions, provides an ideal solution to the sewage treatment problem, as it gives excellent primary and secondary sewage treatment with an absolute minimum of construction effort.
(1) Primary treatment is accomplished by settling and anaerobic digestion. Secondary treatment is accomplished by aerobic digestion.
(2) Sludge accumulates at a very slow rate allowing many years of efficient service from the lagoon without an appreciable reduction in capacity. Sewage lagoon effluent, as is the case with the effluent from conventional sewage treatment plants, is not necessarily free from pathogenic organisms and may require additional treatment." (pages 2-14 and 2-15)

The oxidation pond would be constructed by an Engineer Heavy Combat Company or by a contractor near the Force Provider Module. Techniques for constructing such a pond are well known and are well within the capability of army heavy engineer units. For the purpose of this Decision Cost Estimate, however, funds are allocated to prepare standard blueprints of oxydation ponds for a 550-man module or for six modules located together. In addition, funds for the acquisition of chlorinators is included for treatment of the effluent from the oxidation pond if that is necessary. The O&M cost for the construction of the oxidation pond, excluding troop labor cost, is estimated in Cost Element 5.12.

	Primary POC	Other POC
POC:	Drew Downing	Capt. Simon Nour
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ASSUMPTIONS - OXIDATION POND OR SEWAGE LAGOON TO SUPPORT FORCE PROVIDER

1. All costs are in thousands of FY 1995 dollars, with inflation applied in accordance with Hq Army Materiel Command (AMCRM-E) Memo, Subject: Inflation Guidance dated 7 February 1994.

2. The Operational Requirements Document for the Force Provider plans Initial Procurement for FY 1995 and Initial Operational Capability (IOC) in FY 1996. The Wastewater Treatment System is identified as a Preplanned Product Improvement (P3I) but should follow the Force Provider with minimum delay.

3. The technologies and methods for constructing oxidation ponds are well known and generic blueprints are included in TM 5-302 Armed Forces Component Systems. No complex Research and Development program is required. Consequently, this Decision Cost Estimate assumes a relatively simple program including the development of a package of detailed blueprints for an oxidation pond for a 550-man Force Provider module and for all six modules deployed together and a modified NDI Acquisition Strategy for chlorinators for treatment of the effluent from the oxidation pond if that is necessary. The chlorinators would be acquired in FY 1996 to support the IOC of Force Provider.

4. Based on the schedule and requirements above, system costs for this Decision Cost Estimate are allocated across the life cycle cost years based on the following quantities:

Year	Production Quantity	Fielding Quantity	Sustainment Quantity
1995	0 (R & D)		
1996	36	36	
1997			36
1998			36
1999			36
2000			36
2001			36
2002			36
2003			36
2004			36
2005			36
2006			36
2007			36
2008			36
2009			36
2010			36
2011			36
2012			36
2013			36

2014			36
2015			36
2016			36
2017			0
Σ	36	36	720 chlorinator-yrs

7. Initial Deployment of the Force Provider Wastewater Treatment System will be entirely within CONUS.

ORGANIZATION OF DECISION COST ESTIMATE

This Decision Cost Estimate is composed of three parts as follows:

1. This Introduction.

2. Four Cost Matrices:
   a. Cost Totals by Phase in Constant Dollars
   b. Cost Totals by Phase in Current Dollars
   c. Cost Totals by Year in Constant Dollars
   d. Cost Totals by Year in Current Dollars

3. Cost Data Sheets and Variable Information Sheets arranged by cost category:
   1. RDT&E
   2. Procurement
   3. Construction (No Costs)
   4. Military Personnel (No Costs)
   5. O&M

MAJOR DIFFERENCES FROM BASELINE OR TOTAL LIFE CYCLE COST ESTIMATES

This Decision Cost Estimate was developed to support the Best Technical Approach (BTA) Analysis for the Force Provider Wastewater Treatment System. It differs from a Program Office Life Cycle Cost Estimate (POLCCE) or Baseline Cost Estimate for the system in two important respects:

1. Sunk costs are excluded.

2. Military Personnel Costs are excluded in accordance with Draft TRADOC Pamphlet 11-8, Para 3-2.c.1 (page 25).

BRTRC - Baseline Cost Model - V1.2
Cost Totals by Phase (Constant Dollars) ($k)

OXIDATION POND OR LAGOON FOR FORCE PROVIDER — 05/13/94

	Total	Phase I	Phase II	Phase III	Subsys 3	Subsys 4	Subsys 5
1.0 RDT&E-FUNDED ELEMENTS	419.19	419.19					
1.01 DEVELOPMENT ENGINEERING	208.88	208.88					
1.02 PRODUCIBILITY ENGR AND PLAN (PEP)	0.00	0.00					
1.03 DEVELOPMENT TOOLING	0.00	0.00					
1.04 PROTOTYPE MANUFACTURING	5.55	5.55					
1.05 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	50.00	50.00					
1.051 PROJECT MGMT ADMIN (PM CIV/MIL)	50.00	50.00					
1.052 OTHER	0.00	0.00					
1.06 SYSTEM TEST AND EVALUATION	117.31	117.31					
1.07 TRAINING	22.96	22.96					
1.08 DATA	14.50	14.50					
1.09 SUPPORT EQUIPMENT	0.00	0.00					
1.091 PECULIAR	0.00	0.00					
1.092 COMMON	0.00	0.00					
1.10 DEVELOPMENT FACILITIES	0.00	0.00					
1.11 OTHER RDT&E	0.00	0.00					
2.0 PROCUREMENT-FUNDED ELEMENTS	237.56	237.56					
2.01 NON-RECURRING PRODUCTION	0.00	0.00					
2.011 INITIAL PRODUCTION FACILITIES (IPF)	0.00	0.00					
2.012 PRODUCTION BASE SUPPORT (PBS)	0.00	0.00					
2.013 OTHER NON-RECURRING PRODUCTION	0.00	0.00					
2.02 RECURRING PRODUCTION	117.71	117.71					
2.021 MANUFACTURING	63.27	63.27					
2.022 RECURRING ENGINEERING	54.44	54.44					
2.023 SUSTAINING TOOLING	0.00	0.00					
2.024 QUALITY CONTROL	0.00	0.00					
2.025 OTHER RECURRING PRODUCTION	0.00	0.00					
2.03 ENGINEERING CHANGES	1.90	1.90					
2.04 SYSTEM ENGNRNG/PROGRAM MANAGEMENT	50.00	50.00					
2.041 PROJECT MGMT ADMIN	50.00	50.00					
2.042 OTHER	0.00	0.00					
2.05 SYSTEM TEST & EVALUATION, PRODUCTION	29.33	29.33					
2.06 TRAINING AIDS & EQUIPMENT	0.00	0.00					
2.07 DATA	14.50	14.50					
2.08 SUPPORT EQUIPMENT	0.00	0.00					
2.081 PECULIAR	0.00	0.00					
2.082 COMMON	0.00	0.00					
2.09 OPERATIONAL/SITE ACTIVATION	0.00	0.00					
2.10 FIELDING	24.13	24.13					
2.101 INITIAL DEPOT LEVEL REPARABLE (SPARES	3.16	3.16					
2.102 INITIAL CONSUMABLES (REPAIR PARTS)	3.16	3.16					
2.103 INITIAL SUPPORT EQUIPMENT	0.00	0.00					
2.104 TRANSPORTATION (EQUIPMENT TO UNIT)	5.99	5.99					
2.105 NEW EQUIPMENT TRAINING (NET)	11.81	11.81					
2.106 CONTRACTOR LOGISTICS SUPPORT	0.00	0.00					
2.11 TRAINING AMMUNITIONS/MISSILES	0.00	0.00					
2.12 WAR RESERVE AMMUNITION/MISSILES	0.00	0.00					
2.13 MODIFICATIONS	0.00	0.00					
2.14 OTHER PROCUREMENT	0.00	0.00					
3.0 MILITARY CON-FUNDED ELEMENTS	0.00	0.00					
3.01 DEVELOPMENT CONSTRUCTION	0.00	0.00					
3.02 PRODUCTION CONSTRUCTION	0.00	0.00					
3.03 OPERATIONAL/SITE ACTIVATION CON	0.00	0.00					
3.04 OTHER MC	0.00	0.00					
4.0 MIL PERSONNEL-FUNDED ELEMENTS	0.00	0.00					
4.01 CREW	0.00	0.00					
4.02 MAINTENANCE (MTOE)	0.00	0.00					
4.03 SYSTEM-SPECIFIC SUPPORT	0.00	0.00					
4.04 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00					
4.041 PROJECT MGMT ADMIN (PM MIL)	0.00	0.00					
4.042 OTHER	0.00	0.00					
4.05 REPLACEMENT PERSONNEL	0.00	0.00					
4.051 TRAINING	0.00	0.00					
4.052 PERMANENT CHANGE OF STATION (PCS)	0.00	0.00					
4.06 OTHER MP	0.00	0.00					
5.0 O&M-FUNDED ELEMENTS	4305.19	4305.19					
5.01 FIELD MAINTENANCE CIVILIAN LABOR	0.00	0.00					
5.02 SYSTEM-SPECIFIC BASE OPERATIONS	0.00	0.00					
5.03 REPLEN DEPOT-LEVEL REPARABLE (SPARES)	31.64	31.64					
5.04 REPLEN CONSUMABLES (REPAIR PARTS)	31.64	31.64					
5.05 PETROLEUM, OILS AND LUBRICANTS (POL)	0.00	0.00					
5.06 END-ITEM SUPPLY AND MAINTENANCE	0.00	0.00					
5.061 OVERHAUL (OHM)	0.00	0.00					
5.062 INTEGRATED MATERIEL MANAGEMENT	0.00	0.00					
5.063 SUPPLY DEPOT SUPPORT	0.00	0.00					
5.064 INDUSTRIAL READINESS	0.00	0.00					
5.065 DEMILITARIZATION	0.00	0.00					
5.07 TRANSPORTATION	0.00	0.00					
5.08 SOFTWARE	0.00	0.00					
5.09 SYS TEST AND EVAL, OPERATIONAL	0.00	0.00					
5.10 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	100.00	100.00					
5.101 PROJ MGMT ADMIN (PM CIV)	100.00	100.00					
5.102 OTHER	0.00	0.00					
5.11 TRAINING	0.00	0.00					
5.12 OTHER O&M	4141.92	4141.92					
6.0 DEFENSE BUS OPERATION FUND (DBOF) ELEM	0.00	0.00					
6.01 CLASS IX WAR RESERVE	0.00	0.00					
6.02 OTHER DBOF	0.00	0.00					
TOTALS	4961.95	4961.95					

BRTRC - Baseline Cost Model - V1.2
Cost Totals by Phase (Current Dollars) ($k)

OXIDATION POND OR LAGOON FOR FORCE PROVIDER — 05/13/94

	Total	Phase I	Phase II	Phase III	Subsys 3	Subsys 4	Subsys 5
1.0 RDT&E-FUNDED ELEMENTS	429.67	429.67					
1.01 DEVELOPMENT ENGINEERING	214.10	214.10					
1.02 PRODUCIBILITY ENGR AND PLAN (PEP)	0.00	0.00					
1.03 DEVELOPMENT TOOLING	0.00	0.00					
1.04 PROTOTYPE MANUFACTURING	5.69	5.69					
1.05 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	51.25	51.25					
1.051 PROJECT MGMT ADMIN (PM CIV/MIL)	51.25	51.25					
1.052 OTHER	0.00	0.00					
1.06 SYSTEM TEST AN EVALUATION	120.24	120.24					
1.07 TRAINING	23.53	23.53					
1.08 DATA	14.86	14.86					
1.09 SUPPORT EQUIPMENT	0.00	0.00					
1.091 PECULIAR	0.00	0.00					
1.092 COMMON	0.00	0.00					
1.10 DEVELOPMENT FACILITIES	0.00	0.00					
1.11 OTHER RDT&E	0.00	0.00					
2.0 PROCUREMENT-FUNDED ELEMENTS	255.25	255.25					
2.01 NON-RECURRING PRODUCTION	0.00	0.00					
2.011 INITIAL PRODUCTION FACILITIES (IPF)	0.00	0.00					
2.012 PRODUCTION BASE SUPPORT (PBS)	0.00	0.00					
2.013 OTHER NON-RECURRING PRODUCTION	0.00	0.00					
2.02 RECURRING PRODUCTION	128.45	128.45					
2.021 MANUFACTURING	69.05	69.05					
2.022 RECURRING ENGINEERING	59.41	59.41					
2.023 SUSTAINING TOOLING	0.00	0.00					
2.024 QUALITY CONTROL	0.00	0.00					
2.025 OTHER RECURRING PRODUCTION	0.00	0.00					
2.03 ENGINEERING CHANGES	2.07	2.07					
2.04 SYSTEM ENGNRNG/PROGRAM MANAGEMENT	54.57	54.57					
2.041 PROJECT MGMT ADMIN	54.57	54.57					
2.042 OTHER	0.00	0.00					
2.05 SYSTEM TEST & EVALUATION, PRODUCTION	29.33	29.33					
2.06 TRAINING AIDS & EQUIPMENT	0.00	0.00					
2.07 DATA	14.50	14.50					
2.08 SUPPORT EQUIPMENT	0.00	0.00					
2.081 PECULIAR	0.00	0.00					
2.082 COMMON	0.00	0.00					
2.09 OPERATIONAL/SITE ACTIVATION	0.00	0.00					
2.10 FIELDING	26.33	26.33					
2.101 INITIAL DEPOT LEVEL REPARABLE (SPARES	3.45	3.45					
2.102 INITIAL CONSUMABLES (REPAIR PARTS)	3.45	3.45					
2.103 INITIAL SUPPORT EQUIPMENT	0.00	0.00					
2.104 TRANSPORTATION (EQUIPMENT TO UNIT)	6.54	6.54					
2.105 NEW EQUIPMENT TRAINING (NET)	12.89	12.89					
2.106 CONTRACTOR LOGISTICS SUPPORT	0.00	0.00					
2.11 TRAINING AMMUNITIONS/MISSILES	0.00	0.00					
2.12 WAR RESERVE AMMUNITION/MISSILES	0.00	0.00					
2.13 MODIFICATIONS	0.00	0.00					
2.14 OTHER PROCUREMENT	0.00	0.00					
3.0 MILITARY CON-FUNDED ELEMENTS	0.00	0.00					
3.01 DEVELOPMENT CONSTRUCTION	0.00	0.00					
3.02 PRODUCTION CONSTRUCTION	0.00	0.00					
3.03 OPERATIONAL/SITE ACTIVATION CON	0.00	0.00					
3.04 OTHER MC	0.00	0.00					
4.0 MIL PERSONNEL-FUNDED ELEMENTS	0.00	0.00					
4.01 CREW	0.00	0.00					
4.02 MAINTENANCE (MTOE)	0.00	0.00					
4.03 SYSTEM-SPECIFIC SUPPORT	0.00	0.00					
4.04 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00					
4.041 PROJECT MGMT ADMIN (PM MIL)	0.00	0.00					
4.042 OTHER	0.00	0.00					
4.05 REPLACEMENT PERSONNEL	0.00	0.00					
4.051 TRAINING	0.00	0.00					
4.052 PERMANENT CHANGE OF STATION (PCS)	0.00	0.00					
4.06 OTHER MP	0.00	0.00					
5.0 O&M-FUNDED ELEMENTS	6236.78	6236.78					
5.01 FIELD MAINTENANCE CIVILIAN LABOR	0.00	0.00					
5.02 SYSTEM-SPECIFIC BASE OPERATIONS	0.00	0.00					
5.03 REPLEN DEPOT-LEVEL REPARABLE (SPARES)	45.83	45.83					
5.04 REPLEN CONSUMABLES (REPAIR PARTS)	45.83	45.83					
5.05 PETROLEUM, OILS AND LUBRICANTS (POL)	0.00	0.00					
5.06 END-ITEM SUPPLY AND MAINTENANCE	0.00	0.00					
5.061 OVERHAUL (PTM)	0.00	0.00					
5.062 INTEGRATED MATERIEL MANAGEMENT	0.00	0.00					
5.063 SUPPLY DEPOT SUPPORT	0.00	0.00					
5.064 INDUSTRIAL READINESS	0.00	0.00					
5.065 DEMILITARIZATION	0.00	0.00					
5.07 TRANSPORTATION	0.00	0.00					
5.08 SOFTWARE	0.00	0.00					
5.09 SYS TEST AND EVAL, OPERATIONAL	0.00	0.00					
5.10 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	144.87	144.87					
5.101 PROJ MGMT ADMIN (PM CIV)	144.87	144.87					
5.102 OTHER	0.00	0.00					
5.11 TRAINING	0.00	0.00					
5.12 OTHER O&M	6000.26	6000.26					
6.0 DEFENSE BUS OPERATION FUND (DBOF) ELEM	0.00	0.00					
6.01 CLASS IX WAR RESERVE	0.00	0.00					
6.02 OTHER DBOF	0.00	0.00					
TOTALS	6921.70	6921.70					

BRTRC - Baseline Cost Model - V1.2
Cost Totals by Year (Constant Dollars) ($k)

OXIDATION POND OR LAGOON FOR FORCE PROVIDER — 05/13/94

	Total	1995	1996	1997	1998	1999	2000
1.0 RDT&E-FUNDED ELEMENTS	419.19	419.19	0.00	0.00	0.00	0.00	0.00
1.01 DEVELOPMENT ENGINEERING	208.88	208.88	0.00	0.00	0.00	0.00	0.00
1.02 PRODUCIBILITY ENGR AND PLAN (PEP)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.03 DEVELOPMENT TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.04 PROTOTYPE MANUFACTURING	5.55	5.55	0.00	0.00	0.00	0.00	0.00
1.05 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	50.00	50.00	0.00	0.00	0.00	0.00	0.00
1.051 PROJECT MGMT ADMIN (PM CIV/MIL)	50.00	50.00	0.00	0.00	0.00	0.00	0.00
1.052 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.06 SYSTEM TEST AND EVALUATION	117.31	117.31	0.00	0.00	0.00	0.00	0.00
1.07 TRAINING	22.96	22.96	0.00	0.00	0.00	0.00	0.00
1.08 DATA	14.50	14.50	0.00	0.00	0.00	0.00	0.00
1.09 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.091 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.092 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.10 DEVELOPMENT FACILITIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.11 OTHER RDT&E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.0 PROCUREMENT-FUNDED ELEMENTS	237.56	0.00	237.56	0.00	0.00	0.00	0.00
2.01 NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.011 INITIAL PRODUCTION FACILITIES (IPF)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.012 PRODUCTION BASE SUPPORT (PBS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.013 OTHER NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.02 RECURRING PRODUCTION	117.71	0.00	117.71	0.00	0.00	0.00	0.00
2.021 MANUFACTURING	63.27	0.00	63.27	0.00	0.00	0.00	0.00
2.022 RECURRING ENGINEERING	54.44	0.00	54.44	0.00	0.00	0.00	0.00
2.023 SUSTAINING TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.024 QUALITY CONTROL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.025 OTHER RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.03 ENGINEERING CHANGES	1.90	0.00	1.90	0.00	0.00	0.00	0.00
2.04 SYSTEM ENGNRNG/PROGRAM MANAGEMENT	50.00	0.00	50.00	0.00	0.00	0.00	0.00
2.041 PROJECT MGMT ADMIN	50.00	0.00	50.00	0.00	0.00	0.00	0.00
2.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.05 SYSTEM TEST & EVALUATION, PRODUCTION	29.33	0.00	29.33	0.00	0.00	0.00	0.00
2.06 TRAINING AIDS & EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.07 DATA	14.50	0.00	14.50	0.00	0.00	0.00	0.00
2.08 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.081 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.082 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.09 OPERATIONAL/SITE ACTIVATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.10 FIELDING	24.13	0.00	24.13	0.00	0.00	0.00	0.00
2.101 INITIAL DEPOT LEVEL REPARABLE (SPARES	3.16	0.00	3.16	0.00	0.00	0.00	0.00
2.102 INITIAL CONSUMABLES (REPAIR PARTS)	3.16	0.00	3.16	0.00	0.00	0.00	0.00
2.103 INITIAL SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.104 TRANSPORTATION (EQUIPMENT TO UNIT)	5.99	0.00	5.99	0.00	0.00	0.00	0.00
2.105 NEW EQUIPMENT TRAINING (NET)	11.81	0.00	11.81	0.00	0.00	0.00	0.00
2.106 CONTRACTOR LOGISTICS SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.11 TRAINING AMMUNITIONS/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.12 WAR RESERVE AMMUNITION/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.13 MODIFICATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.14 OTHER PROCUREMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.0 MILITARY CON-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.01 DEVELOPMENT CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.02 PRODUCTION CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.03 OPERATIONAL/SITE ACTIVATION CON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.04 OTHER MC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.0 MIL PERSONNEL-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.01 CREW	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.02 MAINTENANCE (MTOE)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.03 SYSTEM-SPECIFIC SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.04 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.041 PROJECT MGMT ADMIN (PM MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.05 REPLACEMENT PERSONNEL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.051 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.052 PERMANENT CHANGE OF STATION (PCS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.06 OTHER MP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.0 O&M-FUNDED ELEMENTS	4305.19	0.00	0.00	215.26	215.26	215.26	215.26
5.01 FIELD MAINTENANCE CIVILIAN LABOR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.02 SYSTEM-SPECIFIC BASE OPERATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.03 REPLEN DEPOT-LEVEL REPARABLE (SPARES)	31.64	0.00	0.00	1.58	1.58	1.58	1.58
5.04 REPLEN CONSUMABLES (REPAIR PARTS)	31.64	0.00	0.00	1.58	1.58	1.58	1.58
5.05 PETROLEUM, OILS AND LUBRICANTS (POL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.06 END-ITEM SUPPLY AND MAINTENANCE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.061 OVERHAUL (P/M)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.062 INTEGRATED MATERIEL MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.063 SUPPLY DEPOT SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.064 INDUSTRIAL READINESS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.065 DEMILITARIZATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.07 TRANSPORTATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.08 SOFTWARE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.09 SYS TEST AND EVAL, OPERATIONAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.10 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	100.00	0.00	0.00	5.00	5.00	5.00	5.00
5.101 PROJ MGMT ADMIN (PM CIV)	100.00	0.00	0.00	5.00	5.00	5.00	5.00
5.102 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.11 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.12 OTHER O&M	4141.92	0.00	0.00	207.10	207.10	207.10	207.10
6.0 DEFENSE BUS OPERATION FUND (DBOF) ELEM	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.01 CLASS IX WAR RESERVE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.02 OTHER DBOF	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS	4961.94	419.19	237.56	215.26	215.26	215.26	215.26

BRTRC - Baseline Cost Model - V1.2
Cost Totals by Year (Constant Dollars) ($k)

OXIDATION POND OR LAGOON FOR FORCE PROVIDER — 05/13/94

	2001	2002	2003	2004	2005	2006	2007
1.0 RDT&E-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.01 DEVELOPMENT ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.02 PRODUCIBILITY ENGR AND PLAN (PEP)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.03 DEVELOPMENT TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.04 PROTOTYPE MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.05 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.051 PROJECT MGMT ADMIN (PM CIV/MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.052 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.06 SYSTEM TEST AND EVALUATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.07 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.08 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.09 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.091 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.092 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.10 DEVELOPMENT FACILITIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.11 OTHER RDT&E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.0 PROCUREMENT-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.01 NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.011 INITIAL PRODUCTION FACILITIES (IPF)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.012 PRODUCTION BASE SUPPORT (PBS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.013 OTHER NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.02 RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.021 MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.022 RECURRING ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.023 SUSTAINING TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.024 QUALITY CONTROL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.025 OTHER RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.03 ENGINEERING CHANGES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.04 SYSTEM ENGNRNG/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.041 PROJECT MGMT ADMIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.05 SYSTEM TEST & EVALUATION, PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.06 TRAINING AIDS & EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.07 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.08 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.081 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.082 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.09 OPERATIONAL/SITE ACTIVATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.10 FIELDING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.101 INITIAL DEPOT LEVEL REPARABLE (SPARES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.102 INITIAL CONSUMABLES (REPAIR PARTS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.103 INITIAL SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.104 TRANSPORTATION (EQUIPMENT TO UNIT)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.105 NEW EQUIPMENT TRAINING (NET)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.106 CONTRACTOR LOGISTICS SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.11 TRAINING AMMUNITIONS/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.12 WAR RESERVE AMMUNITION/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.13 MODIFICATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.14 OTHER PROCUREMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.0 MILITARY CON-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.01 DEVELOPMENT CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.02 PRODUCTION CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.03 OPERATIONAL/SITE ACTIVATION CON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.04 OTHER MC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.0 MIL PERSONNEL-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.01 CREW	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.02 MAINTENANCE (MTCE)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.03 SYSTEM-SPECIFIC SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.04 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.041 PROJECT MGMT ADMIN (PM MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.05 REPLACEMENT PERSONNEL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.051 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.052 PERMANENT CHANGE OF STATION ,PCS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.06 OTHER MP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.0 O&M-FUNDED ELEMENTS	215.26	215.26	215.26	215.26	215.26	215.26	215.26
5.01 FIELD MAINTENANCE CIVILIAN LABOR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.02 SYSTEM-SPECIFIC BASE OPERATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.03 REPLEN DEPOT-LEVEL REPARABLE (SPARES)	1.58	1.58	1.58	1.58	1.58	1.58	1.58
5.04 REPLEN CONSUMABLES (REPAIR PARTS)	1.58	1.58	1.58	1.58	1.58	1.58	1.58
5.05 PETROLEUM, OILS AND LUBRICANTS (POL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.06 END-ITEM SUPPLY AND MAINTENANCE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.061 OVERHAUL (PTM)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.062 INTEGRATED MATERIEL MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.063 SUPPLY DEPOT SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.064 INDUSTRIAL READINESS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.065 DEMILITARIZATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.07 TRANSPORTATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.08 SOFTWARE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.09 SYS TEST AND EVAL, OPERATIONAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.10 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	5.00	5.00	5.00	5.00	5.00	5.00	5.00
5.101 PROJ MGMT ADMIN (PM CIV)	5.00	5.00	5.00	5.00	5.00	5.00	5.00
5.102 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.11 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.12 OTHER O&M	207.10	207.10	207.10	207.10	207.10	207.10	207.10
6.0 DEFENSE BUS OPERATION FUND (DBOF) ELEM	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.01 CLASS IX WAR RESERVE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.02 OTHER DBOF	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS	215.26	215.26	215.26	215.26	215.26	215.26	215.26

BRTRC - Baseline Cost Model - V1.2
Cost Totals by Year (Constant Dollars) ($k)

OXIDATION POND OR LAGOON FOR FORCE PROVIDER — 05/13/94

	2008	2009	2010	2011	2012	2013	2014
1.0 RDT&E-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.01 DEVELOPMENT ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.02 PRODUCIBILITY ENGR AND PLAN (PEP)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.03 DEVELOPMENT TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.04 PROTOTYPE MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.05 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.051 PROJECT MGMT ADMIN (PM CIV/MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.052 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.06 SYSTEM TEST AND EVALUATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.07 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.08 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.09 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.091 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.092 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.10 DEVELOPMENT FACILITIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.11 OTHER RDT&E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.0 PROCUREMENT-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.01 NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.011 INITIAL PRODUCTION FACILITIES (IPF)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.012 PRODUCTION BASE SUPPORT (PBS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.013 OTHER NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.02 RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.021 MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.022 RECURRING ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.023 SUSTAINING TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.024 QUALITY CONTROL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.025 OTHER RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.03 ENGINEERING CHANGES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.04 SYSTEM ENGNRNG/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.041 PROJECT MGMT ADMIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.05 SYSTEM TEST & EVALUATION, PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.06 TRAINING AIDS & EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.07 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.08 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.081 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.082 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.09 OPERATIONAL/SITE ACTIVATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.10 FIELDING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.101 INITIAL DEPOT LEVEL REPARABLE (SPARES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.102 INITIAL CONSUMABLES (REPAIR PARTS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.103 INITIAL SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.104 TRANSPORTATION (EQUIPMENT TO UNIT)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.105 NEW EQUIPMENT TRAINING (NET)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.106 CONTRACTOR LOGISTICS SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.11 TRAINING AMMUNITIONS/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.12 WAR RESERVE AMMUNITION/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.13 MODIFICATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.14 OTHER PROCUREMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.0 MILITARY CON-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.01 DEVELOPMENT CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.02 PRODUCTION CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.03 OPERATIONAL/SITE ACTIVATION CON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.04 OTHER MC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.0 MIL PERSONNEL-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.01 CREW	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.02 MAINTENANCE (MTOE)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.03 SYSTEM-SPECIFIC SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.04 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.041 PROJECT MGMT ADMIN (PM MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.05 REPLACEMENT PERSONNEL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.051 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.052 PERMANENT CHANGE OF STATION (PCS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.06 OTHER MP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.0 O&M-FUNDED ELEMENTS	215.26	215.26	215.26	215.26	215.26	215.26	215.26
5.01 FIELD MAINTENANCE CIVILIAN LABOR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.02 SYSTEM-SPECIFIC BASE OPERATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.03 REPLEN DEPOT-LEVEL REPARABLE (SPARES)	1.58	1.58	1.58	1.58	1.58	1.58	1.58
5.04 REPLEN CONSUMABLES (REPAIR PARTS)	1.58	1.58	1.58	1.58	1.58	1.58	1.58
5.05 PETROLEUM, OILS AND LUBRICANTS (POL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.06 END-ITEM SUPPLY AND MAINTENANCE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.061 OVERHAUL (PTM)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.062 INTEGRATED MATERIEL MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.063 SUPPLY DEPOT SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.064 INDUSTRIAL READINESS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.065 DEMILITARIZATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.07 TRANSPORTATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.08 SOFTWARE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.09 SYS TEST AND EVAL, OPERATIONAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.10 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	5.00	5.00	5.00	5.00	5.00	5.00	5.00
5.101 PROJ MGMT ADMIN (PM CIV)	5.00	5.00	5.00	5.00	5.00	5.00	5.00
5.102 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.11 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.12 OTHER O&M	207.10	207.10	207.10	207.10	207.10	207.10	207.10
6.0 DEFENSE BUS OPERATION FUND (DBOF) ELEM	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.01 CLASS IX WAR RESERVE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.02 OTHER DBOF	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS	215.26	215.26	215.26	215.26	215.26	215.26	215.26

BRTRC - Baseline Cost Model - V1.2
Cost Totals by Year (Constant Dollars) ($k)

GAUDALION POND OR LAGOON FOR FORCE PROVIDER — 05/13/94

	2015	2016	2017	2018	2019	2020	2021
1.0 RDT&E-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.01 DEVELOPMENT ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.02 PRODUCIBILITY ENGR AND PLAN (PEP)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.03 DEVELOPMENT TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.04 PROTOTYPE MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.05 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.051 PROJECT MGMT ADMIN (PM CIV/MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.052 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.06 SYSTEM TEST AND EVALUATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.07 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.08 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.09 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.091 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.092 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.10 DEVELOPMENT FACILITIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.11 OTHER RDT&E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.0 PROCUREMENT-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.01 NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.011 INITIAL PRODUCTION FACILITIES (IPF)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.012 PRODUCTION BASE SUPPORT (PBS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.013 OTHER NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.02 RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.021 MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.022 RECURRING ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.023 SUSTAINING TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.024 QUALITY CONTROL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.025 OTHER RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.03 ENGINEERING CHANGES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.04 SYSTEM ENGNRNG/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.041 PROJECT MGMT ADMIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.05 SYSTEM TEST & EVALUATION, PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.06 TRAINING AIDS & EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.07 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.08 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.081 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.082 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.09 OPERATIONAL/SITE ACTIVATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.10 FIELDING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.101 INITIAL DEPOT LEVEL REPARABLE (SPARES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.102 INITIAL CONSUMABLES (REPAIR PARTS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.103 INITIAL SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.104 TRANSPORTATION (EQUIPMENT TO UNIT)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.105 NEW EQUIPMENT TRAINING (NET)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.106 CONTRACTOR LOGISTICS SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.11 TRAINING AMMUNITIONS/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.12 WAR RESERVE AMMUNITION/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.13 MODIFICATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.14 OTHER PROCUREMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.0 MILITARY CON-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.01 DEVELOPMENT CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.02 PRODUCTION CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.03 OPERATIONAL/SITE ACTIVATION CON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.04 OTHER MC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.0 MIL PERSONNEL-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.01 CREW	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.02 MAINTENANCE (MTOE)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.03 SYSTEM-SPECIFIC SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.04 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.041 PROJECT MGMT ADMIN (PM MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.05 REPLACEMENT PERSONNEL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.051 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.052 PERMANENT CHANGE OF STATION (PCS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.06 OTHER MP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.0 O&M FUNDED ELEMENTS	215.26	215.26	0.00	0.00	0.00	0.00	0.00
5.01 FIELD MAINTENANCE CIVILIAN LABOR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.02 SYSTEM-SPECIFIC BASE OPERATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.03 REPLEN DEPOT-LEVEL REPARABLE (SPARES)	1.58	1.58	0.00	0.00	0.00	0.00	0.00
5.04 REPLEN CONSUMABLES (REPAIR PARTS)	1.58	1.58	0.00	0.00	0.00	0.00	0.00
5.05 PETROLEUM, OILS AND LUBRICANTS (POL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.06 END-ITEM SUPPLY AND MAINTENANCE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.061 OVERHAUL (PTM)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.062 INTEGRATED MATERIEL MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.063 SUPPLY DEPOT SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.064 INDUSTRIAL READINESS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.065 DEMILITARIZATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.07 TRANSPORTATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.08 SOFTWARE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.09 SYS TEST AND EVAL, OPERATIONAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.10 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	5.00	5.00	0.00	0.00	0.00	0.00	0.00
5.101 PROJ MGMT ADMIN (PM CIV)	5.00	5.00	0.00	0.00	0.00	0.00	0.00
5.102 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.11 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.12 OTHER O&M	207.10	207.10	0.00	0.00	0.00	0.00	0.00
6.0 DEFENSE BUS OPERATION FUND (DBOF) ELEM	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.01 CLASS IX WAR RESERVE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.02 OTHER DBOF	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS	215.26	215.26	0.00	0.00	0.00	0.00	0.00

BRTRC - Baseline Cost Model - V1.2
Cost Totals by Year (Current Dollars) ($k)

OXIDATION POND OR LAGOON FOR FORCE PROVIDER

05/13/94

	Total	1995	1996	1997	1998	1999	2000
1.0 RDT&E-FUNDED ELEMENTS	429.67	429.67	0.00	0.00	0.00	0.00	0.00
1.01 DEVELOPMENT ENGINEERING	214.10	214.10	0.00	0.00	0.00	0.00	0.00
1.02 PRODUCIBILITY ENGR AND PLAN (PEP)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.03 DEVELOPMENT TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.04 PROTOTYPE MANUFACTURING	5.69	5.69	0.00	0.00	0.00	0.00	0.00
1.05 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	51.25	51.25	0.00	0.00	0.00	0.00	0.00
1.051 PROJECT MGMT ADMIN (PM CIV/MIL)	51.25	51.25	0.00	0.00	0.00	0.00	0.00
1.052 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.06 SYSTEM TEST AND EVALUATION	120.24	120.24	0.00	0.00	0.00	0.00	0.00
1.07 TRAINING	23.53	23.53	0.00	0.00	0.00	0.00	0.00
1.08 DATA	14.86	14.86	0.00	0.00	0.00	0.00	0.00
1.09 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.091 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.092 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.10 DEVELOPMENT FACILITIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.11 OTHER RDT&E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.0 PROCUREMENT-FUNDED ELEMENTS	255.25	0.00	255.25	0.00	0.00	0.00	0.00
2.01 NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.011 INITIAL PRODUCTION FACILITIES (IPF)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.012 PRODUCTION BASE SUPPORT (PBS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.013 OTHER NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.02 RECURRING PRODUCTION	128.45	0.00	128.45	0.00	0.00	0.00	0.00
2.021 MANUFACTURING	69.05	0.00	69.05	0.00	0.00	0.00	0.00
2.022 RECURRING ENGINEERING	59.41	0.00	59.41	0.00	0.00	0.00	0.00
2.023 SUSTAINING TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.024 QUALITY CONTROL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.025 OTHER RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.03 ENGINEERING CHANGES	2.07	0.00	2.07	0.00	0.00	0.00	0.00
2.04 SYSTEM ENGNRNG/PROGRAM MANAGEMENT	54.57	0.00	54.57	0.00	0.00	0.00	0.00
2.041 PROJECT MGMT ADMIN	54.57	0.00	54.57	0.00	0.00	0.00	0.00
2.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.05 SYSTEM TEST & EVALUATION, PRODUCTION	29.33	0.00	29.33	0.00	0.00	0.00	0.00
2.06 TRAINING AIDS & EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.07 DATA	14.50	0.00	14.50	0.00	0.00	0.00	0.00
2.08 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.081 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.082 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.09 OPERATIONAL/SITE ACTIVATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.10 FIELDING	26.33	0.00	26.33	0.00	0.00	0.00	0.00
2.101 INITIAL DEPOT LEVEL REPARABLE (SPARES	3.45	0.00	3.45	0.00	0.00	0.00	0.00
2.102 INITIAL CONSUMABLES (REPAIR PARTS)	3.45	0.00	3.45	0.00	0.00	0.00	0.00
2.103 INITIAL SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.104 TRANSPORTATION (EQUIPMENT TO UNIT)	6.54	0.00	6.54	0.00	0.00	0.00	0.00
2.105 NEW EQUIPMENT TRAINING (NET)	12.89	0.00	12.89	0.00	0.00	0.00	0.00
2.106 CONTRACTOR LOGISTICS SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.11 TRAINING AMMUNITIONS/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.12 WAR RESERVE AMMUNITION/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.13 MODIFICATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.14 OTHER PROCUREMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.0 MILITARY CON-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.01 DEVELOPMENT CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.02 PRODUCTION CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.03 OPERATIONAL/SITE ACTIVATION CON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.04 OTHER MC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.0 MIL PERSONNEL-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.01 CREW	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.02 MAINTENANCE (MTOE)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.03 SYSTEM-SPECIFIC SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.04 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.041 PROJECT MGMT ADMIN (PM MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.05 REPLACEMENT PERSONNEL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.051 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.052 PERMANENT CHANGE OF STATION (PCS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.06 OTHER MP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.0 O&M-FUNDED ELEMENTS	6236.78	0.00	0.00	232.11	239.07	246.24	253.62
5.01 FIELD MAINTENANCE CIVILIAN LABOR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.02 SYSTEM-SPECIFIC BASE OPERATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.03 REPLEN DEPOT-LEVEL REPARABLE (SPARES)	45.83	0.00	0.00	1.71	1.76	1.81	1.86
5.04 REPLEN CONSUMABLES (REPAIR PARTS)	45.83	0.00	0.00	1.71	1.76	1.81	1.86
5.05 PETROLEUM, OILS AND LUBRICANTS (POL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.06 END-ITEM SUPPLY AND MAINTENANCE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.061 OVERHAUL (PTM)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.062 INTEGRATED MATERIEL MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.063 SUPPLY DEPOT SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.064 INDUSTRIAL READINESS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.065 DEMILITARIZATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.07 TRANSPORTATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.08 SOFTWARE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.09 SYS TEST AND EVAL, OPERATIONAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.10 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	144.87	0.00	0.00	5.39	5.55	5.72	5.89
5.101 PROJ MGMT ADMIN (PM CIV)	144.87	0.00	0.00	5.39	5.55	5.72	5.89
5.102 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.11 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.12 OTHER O&M	6000.26	0.00	0.00	223.31	230.00	236.90	244.00
6.0 DEFENSE BUS OPERATION FUND (DBOF) ELEM	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.01 CLASS IX WAR RESERVE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.02 OTHER DBOF	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS	6921.70	429.67	255.25	232.11	239.07	246.24	253.62

BRTRC - Baseline Cost Model - V1.2
Cost Totals by Year (Current Dollars) ($k)

OXIDATION POND OR LAGOON FOR FORCE PROVIDER

05/13/94

	2001	2002	2003	2004	2005	2006	2007
1.0 RDT&E-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.01 DEVELOPMENT ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.02 PRODUCIBILITY ENGR AND PLAN (PEP)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.03 DEVELOPMENT TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.04 PROTOTYPE MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.05 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.051 PROJECT MGMT ADMIN (PM CIV/MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.052 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.06 SYSTEM TEST AND EVALUATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.07 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.08 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.09 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.091 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.092 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.10 DEVELOPMENT FACILITIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.11 OTHER RDT&E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.0 PROCUREMENT-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.01 NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.011 INITIAL PRODUCTION FACILITIES (IPF)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.012 PRODUCTION BASE SUPPORT (PBS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.013 OTHER NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.02 RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.021 MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.022 RECURRING ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.023 SUSTAINING TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.024 QUALITY CONTROL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.025 OTHER RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.03 ENGINEERING CHANGES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.04 SYSTEM ENGNRNG/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.041 PROJECT MGMT ADMIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.05 SYSTEM TEST & EVALUATION, PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.06 TRAINING AIDS & EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.07 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.08 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.081 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.082 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.09 OPERATIONAL/SITE ACTIVATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.10 FIELDING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.101 INITIAL DEPOT LEVEL REPARABLE (SPARES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.102 INITIAL CONSUMABLES (REPAIR PARTS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.103 INITIAL SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.104 TRANSPORTATION (EQUIPMENT TO UNIT)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.105 NEW EQUIPMENT TRAINING (NET)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.106 CONTRACTOR LOGISTICS SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.11 TRAINING AMMUNITIONS/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.12 WAR RESERVE AMMUNITION/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.13 MODIFICATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.14 OTHER PROCUREMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.0 MILITARY CON-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.01 DEVELOPMENT CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.02 PRODUCTION CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.03 OPERATIONAL/SITE ACTIVATION CON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.04 OTHER MC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.0 MIL PERSONNEL-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.01 CREW	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.02 MAINTENANCE (MTOE)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.03 SYSTEM-SPECIFIC SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.04 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.041 PROJECT MGMT ADMIN (PM MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.05 REPLACEMENT PERSONNEL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.051 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.052 PERMANENT CHANGE OF STATION (PCS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.06 OTHER MP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.0 O&M-FUNDED ELEMENTS	261.24	269.07	277.15	285.46	294.02	302.85	311.93
5.01 FIELD MAINTENANCE CIVILIAN LABOR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.02 SYSTEM-SPECIFIC BASE OPERATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.03 REPLEN DEPOT-LEVEL REPARABLE (SPARES)	1.92	1.98	2.04	2.10	2.16	2.23	2.29
5.04 REPLEN CONSUMABLES (REPAIR PARTS)	1.92	1.98	2.04	2.10	2.16	2.23	2.29
5.05 PETROLEUM, OILS AND LUBRICANTS (POL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.06 END-ITEM SUPPLY AND MAINTENANCE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.061 OVERHAUL (PTM)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.062 INTEGRATED MATERIEL MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.063 SUPPLY DEPOT SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.064 INDUSTRIAL READINESS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.065 DEMILITARIZATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.07 TRANSPORTATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.08 SOFTWARE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.09 SYS TEST AND EVAL, OPERATIONAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.10 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	6.07	6.25	6.44	6.63	6.83	7.03	7.25
5.101 PROJ MGMT ADMIN (PM CIV)	6.07	6.25	6.44	6.63	6.83	7.03	7.25
5.102 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.11 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.12 OTHER O&M	251.33	258.87	266.64	274.63	282.87	291.36	300.10
6.0 DEFNSE BUS OPERATION FUND (DBOF) ELEM	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.01 CLASS IX WAR RESERVE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.02 OTHER DBOF	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS	261.24	269.07	277.15	285.46	294.02	302.85	311.93

BRTRC - Baseline Cost Model - V1.2
Cost Totals by Year (Current Dollars) ($k)

OXIDATION POND OR LAGOON FOR FORCE PROVIDER

05/13/94

	2008	2009	2010	2011	2012	2013	2014
1.0 RDT&E-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.01 DEVELOPMENT ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.02 PRODUCIBILITY ENGR AND PLAN (PEP)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.03 DEVELOPMENT TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.04 PROTOTYPE MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.05 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.051 PROJECT MGMT ADMIN (PM CIV/MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.052 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.06 SYSTEM TEST AND EVALUATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.07 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.08 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.09 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.091 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.092 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.10 DEVELOPMENT FACILITIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.11 OTHER RDT&E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.0 PROCUREMENT-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.01 NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.011 INITIAL PRODUCTION FACILITIES (IPF)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.012 PRODUCTION BASE SUPPORT (PBS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.013 OTHER NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.02 RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.021 MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.022 RECURRING ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.023 SUSTAINING TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.024 QUALITY CONTROL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.025 OTHER RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.03 ENGINEERING CHANGES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.04 SYSTEM ENGNRNG/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.041 PROJECT MGMT ADMIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.05 SYSTEM TEST & EVALUATION, PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.06 TRAINING AIDS & EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.07 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.08 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.081 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.082 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.09 OPERATIONAL/SITE ACTIVATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.10 FIELDING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.101 INITIAL DEPOT LEVEL REPARABLE (SPARES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.102 INITIAL CONSUMABLES (REPAIR PARTS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.103 INITIAL SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.104 TRANSPORTATION (EQUIPMENT TO UNIT)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.105 NEW EQUIPMENT TRAINING (NET)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.106 CONTRACTOR LOGISTICS SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.11 TRAINING AMMUNITIONS/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.12 WAR RESERVE AMMUNITION/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.13 MODIFICATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.14 OTHER PROCUREMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.0 MILITARY CON-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.01 DEVELOPMENT CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.02 PRODUCTION CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.03 OPERATIONAL/SITE ACTIVATION CON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.04 OTHER MC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.0 MIL PERSONNEL-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.01 CREW	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.02 MAINTENANCE (MTOE)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.03 SYSTEM-SPECIFIC SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.04 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.041 PROJECT MGMT ADMIN (PM MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.05 REPLACEMENT PERSONNEL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.051 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.052 PERMANENT CHANGE OF STATION (PCS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.06 OTHER MP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.0 O&M-FUNDED ELEMENTS	321.30	330.92	340.86	351.09	361.61	372.46	383.64
5.01 FIELD MAINTENANCE CIVILIAN LABOR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.02 SYSTEM-SPECIFIC BASE OPERATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.03 REPLEN DEPOT-LEVEL REPARABLE (SPARES)	2.36	2.43	2.50	2.58	2.66	2.74	2.82
5.04 REPLEN CONSUMABLES (REPAIR PARTS)	2.36	2.43	2.50	2.58	2.66	2.74	2.82
5.05 PETROLEUM, OILS AND LUBRICANTS (POL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.06 END-ITEM SUPPLY AND MAINTENANCE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.061 OVERHAUL (PTM)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.062 INTEGRATED MATERIEL MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.063 SUPPLY DEPOT SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.064 INDUSTRIAL READINESS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.065 DEMILITARIZATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.07 TRANSPORTATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.08 SOFTWARE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.09 SYS TEST AND EVAL, OPERATIONAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.10 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	7.46	7.69	7.92	8.15	8.40	8.65	8.91
5.101 PROJ MGMT ADMIN (PM CIV)	7.46	7.69	7.92	8.15	8.40	8.65	8.91
5.102 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.11 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.12 OTHER O&M	309.11	318.37	327.94	337.77	347.90	358.34	369.09
6.0 DEFNSE BUS OPERATION FUND (DBOF) ELEM	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.01 CLASS IX WAR RESERVE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.02 OTHER DBOF	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS	321.30	330.92	340.86	351.09	361.61	372.46	383.64

BRTRC - Baseline Cost Model - V1.2
Cost Totals by Year (Current Dollars) ($k)

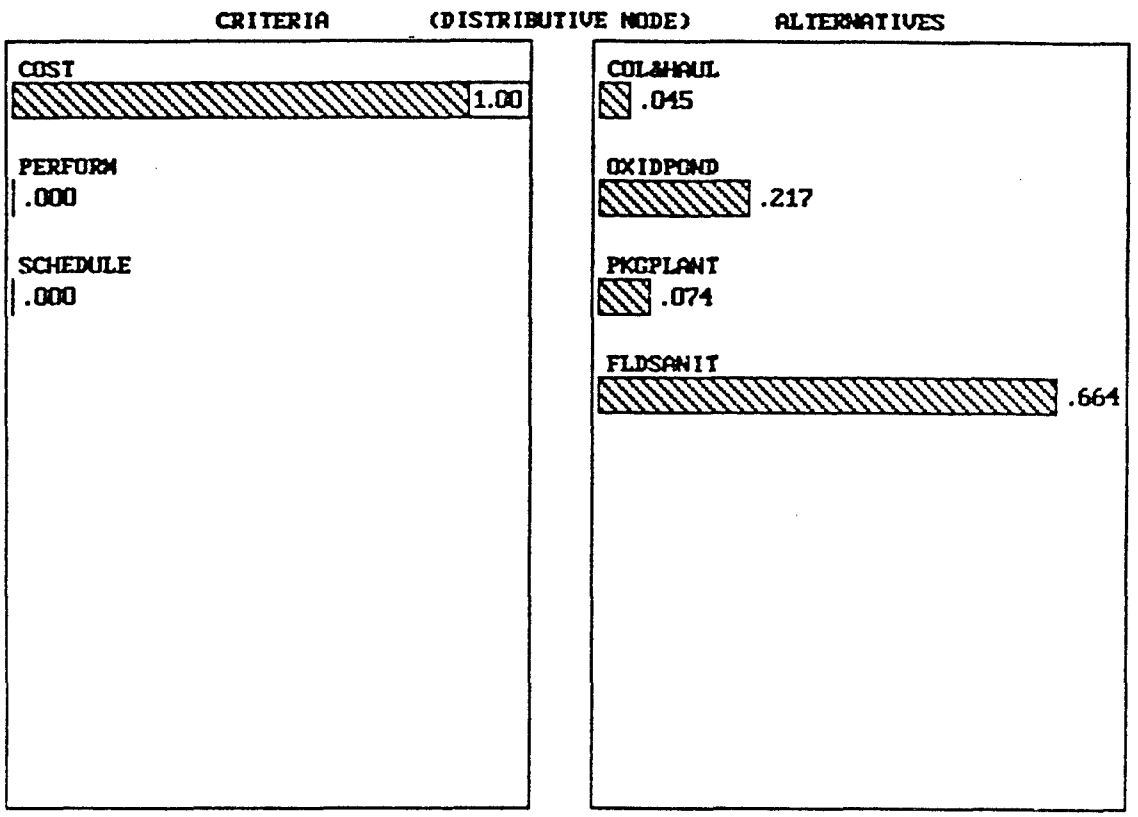
OXIDATION POND OR LAGOON FOR FORCE PROVIDER

05/13/94

	2015	2016	2017	2018	2019	2020	2021
1.0 RDT&E-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.01 DEVELOPMENT ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.02 PRODUCIBILITY ENGR AND PLAN (PEP)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.03 DEVELOPMENT TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.04 PROTOTYPE MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.05 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.051 PROJECT MGMT ADMIN (PM CIV/MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.052 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.06 SYSTEM TEST AND EVALUATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.07 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.08 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.09 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.091 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.092 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.10 DEVELOPMENT FACILITIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.11 OTHER RDT&E	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.0 PROCUREMENT-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.01 NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.011 INITIAL PRODUCTION FACILITIES (IPF)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.012 PRODUCTION BASE SUPPORT (PBS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.013 OTHER NON-RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.02 RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.021 MANUFACTURING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.022 RECURRING ENGINEERING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.023 SUSTAINING TOOLING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.024 QUALITY CONTROL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.025 OTHER RECURRING PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.03 ENGINEERING CHANGES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.04 SYSTEM ENGNRNG/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.041 PROJECT MGMT ADMIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.05 SYSTEM TEST & EVALUATION, PRODUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.06 TRAINING AIDS & EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.07 DATA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.08 SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.081 PECULIAR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.082 COMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.09 OPERATIONAL/SITE ACTIVATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.10 FIELDING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.101 INITIAL DEPOT LEVEL REPARABLE (SPARES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.102 INITIAL CONSUMABLES (REPAIR PARTS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.103 INITIAL SUPPORT EQUIPMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.104 TRANSPORTATION (EQUIPMENT TO UNIT)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.105 NEW EQUIPMENT TRAINING (NET)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.106 CONTRACTOR LOGISTICS SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.11 TRAINING AMMUNITIONS/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.12 WAR RESERVE AMMUNITION/MISSILES	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.13 MODIFICATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.14 OTHER PROCUREMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.0 MILITARY CON-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.01 DEVELOPMENT CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.02 PRODUCTION CONSTRUCTION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.03 OPERATIONAL/SITE ACTIVATION CON	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3.04 OTHER MC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.0 MIL PERSONNEL-FUNDED ELEMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.01 CREW	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.02 MAINTENANCE (MTOE)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.03 SYSTEM-SPECIFIC SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.04 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.041 PROJECT MGMT ADMIN (PM MIL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.042 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.05 REPLACEMENT PERSONNEL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.051 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.052 PERMANENT CHANGE OF STATION (PCS)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.06 OTHER MP	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.0 O&M-FUNDED ELEMENTS	395.15	406.99	0.00	0.00	0.00	0.00	0.00
5.01 FIELD MAINTENANCE CIVILIAN LABOR	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.02 SYSTEM-SPECIFIC BASE OPERATIONS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.03 REPLEN DEPOT-LEVEL REPARABLE (SPARES)	2.90	2.99	0.00	0.00	0.00	0.00	0.00
5.04 REPLEN CONSUMABLES (REPAIR PARTS)	2.90	2.99	0.00	0.00	0.00	0.00	0.00
5.05 PETROLEUM, OILS AND LUBRICANTS (POL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.06 END-ITEM SUPPLY AND MAINTENANCE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.061 OVERHAUL (PTM)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.062 INTEGRATED MATERIEL MANAGEMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.063 SUPPLY DEPOT SUPPORT	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.064 INDUSTRIAL READINESS	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.065 DEMILITARIZATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.07 TRANSPORTATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.08 SOFTWARE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.09 SYS TEST AND EVAL, OPERATIONAL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.10 SYSTEM ENGINEERING/PROGRAM MANAGEMENT	9.18	9.45	0.00	0.00	0.00	0.00	0.00
5.101 PROJ MGMT ADMIN (PM CIV)	9.18	9.45	0.00	0.00	0.00	0.00	0.00
5.102 OTHER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.11 TRAINING	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.12 OTHER O&M	380.17	391.56	0.00	0.00	0.00	0.00	0.00
6.0 DEFENSE BUS OPERATION FUND (DBOF) ELEM	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.01 CLASS IX WAR RESERVE	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6.02 OTHER DBOF	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS	395.15	406.99	0.00	0.00	0.00	0.00	0.00

APPENDIX G

SENSITIVITY GRAPHS



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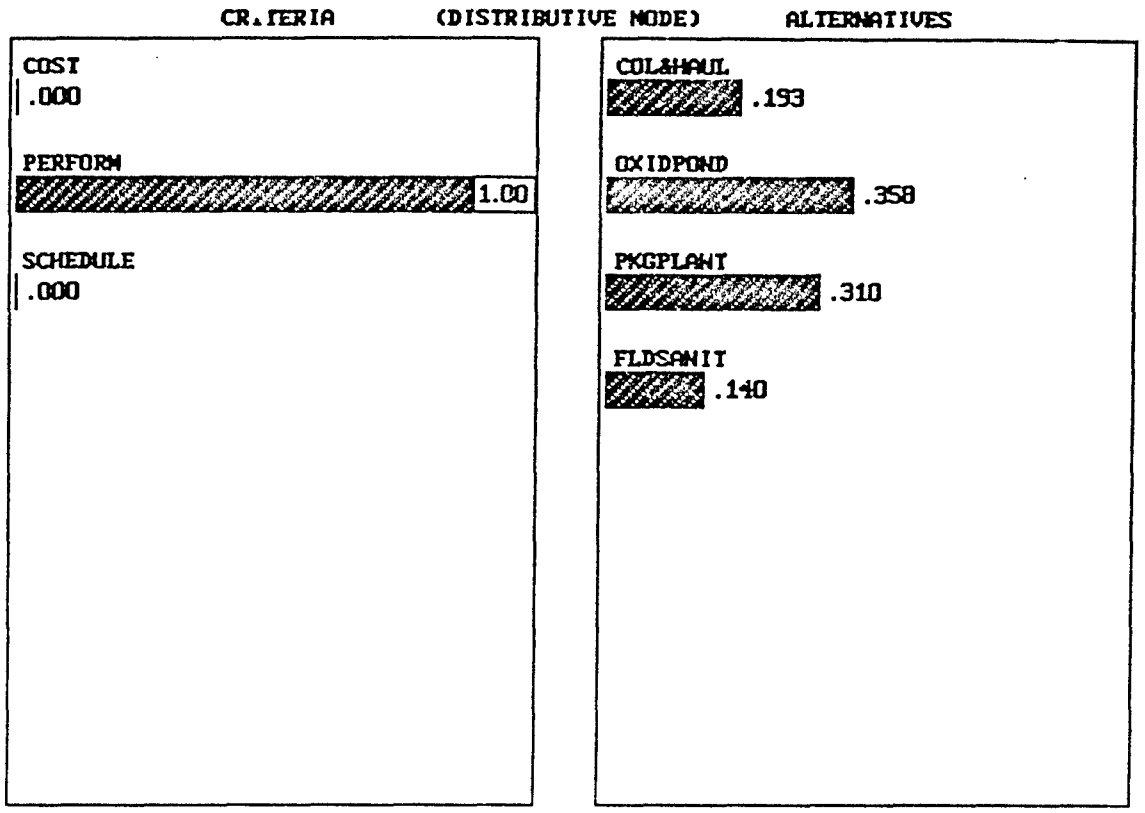

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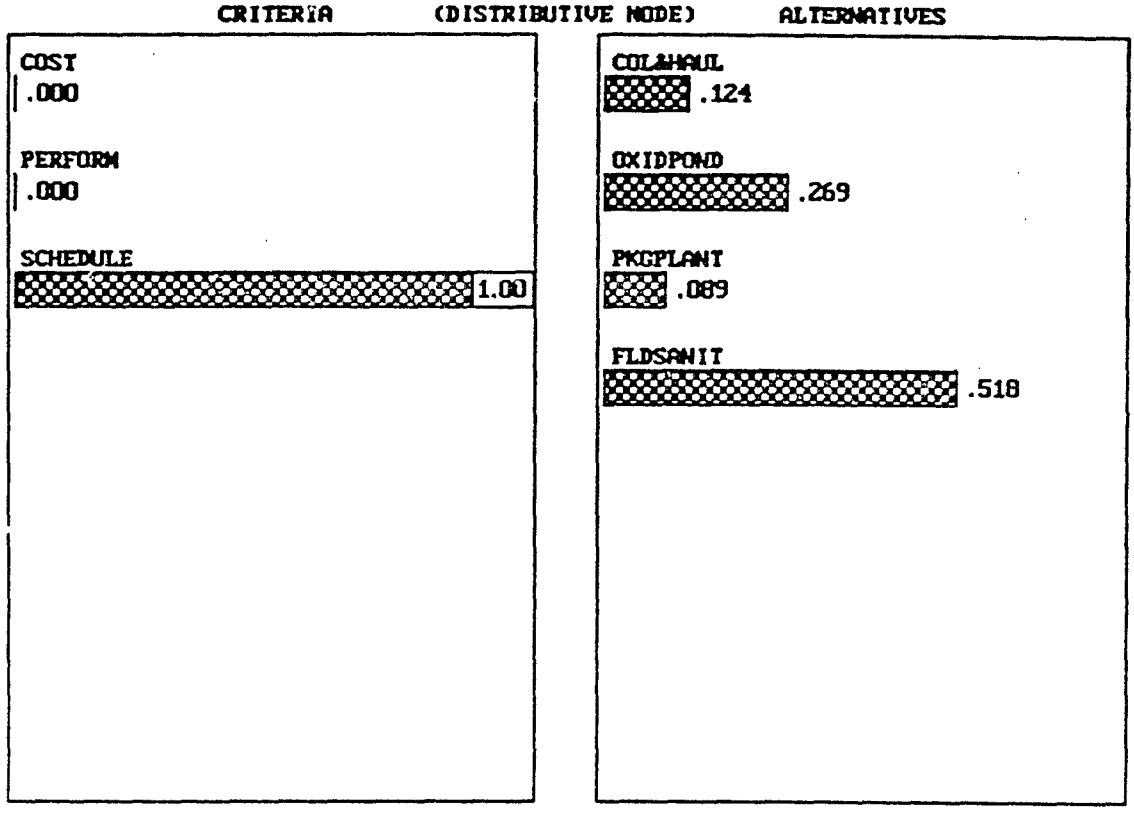

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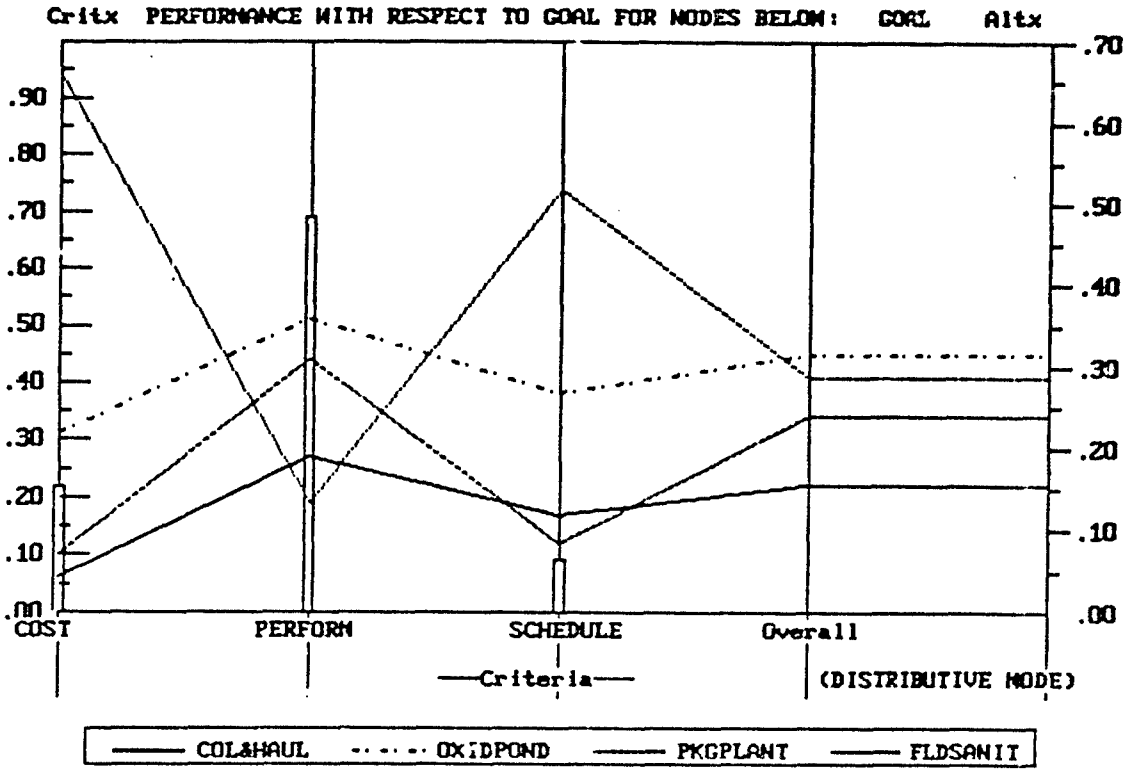

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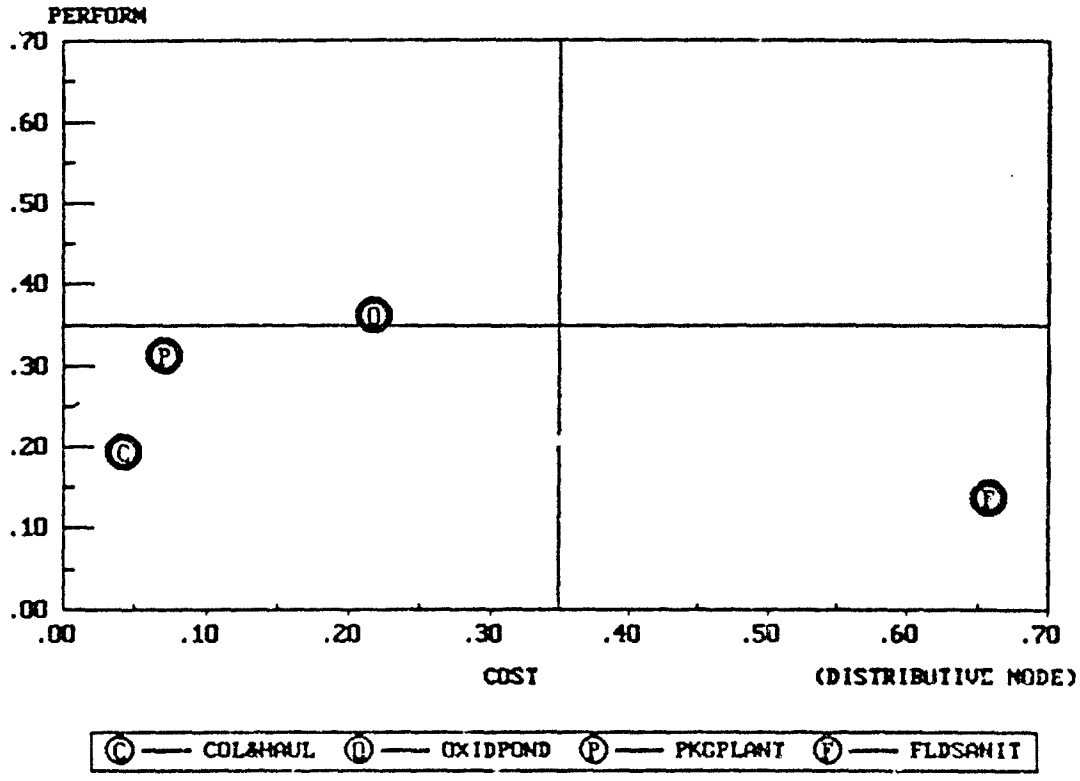

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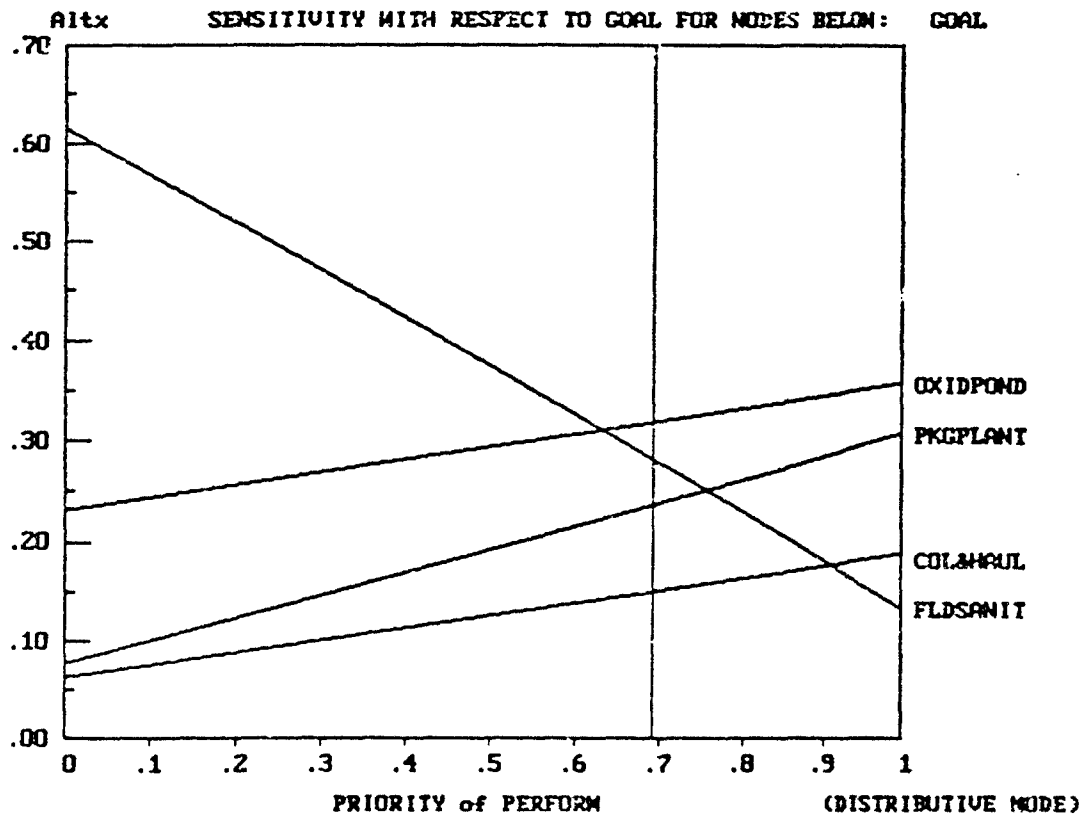

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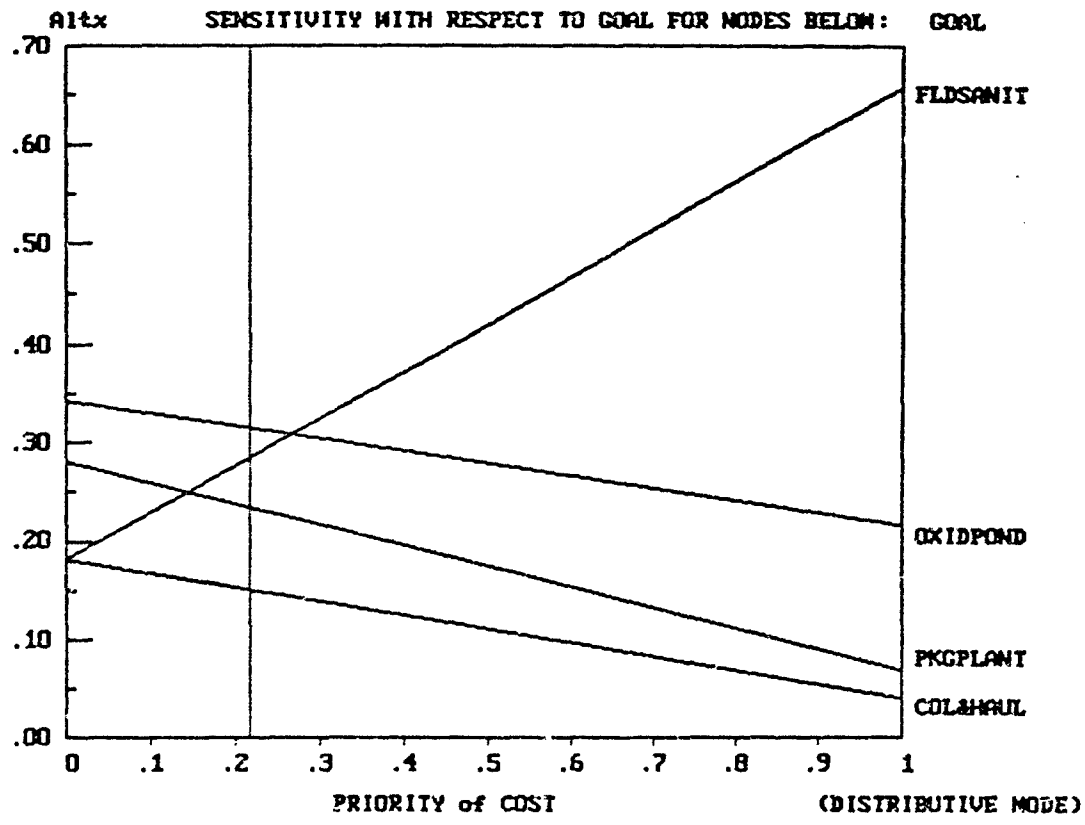

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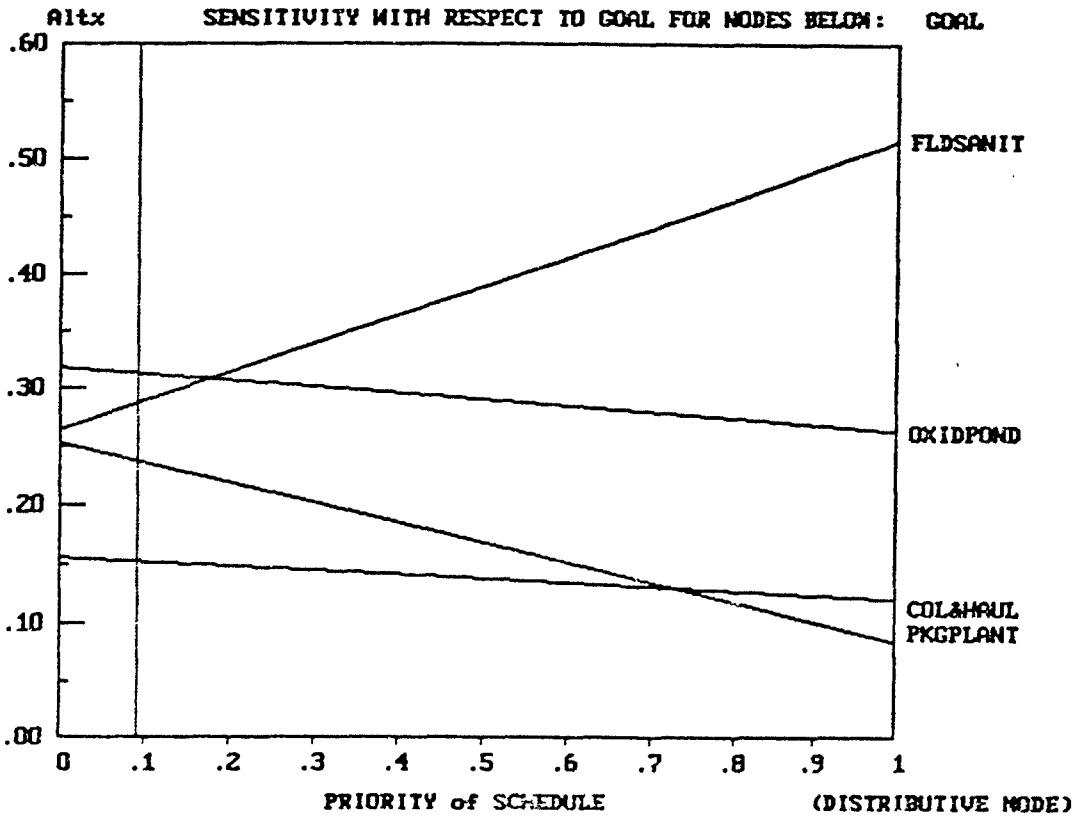

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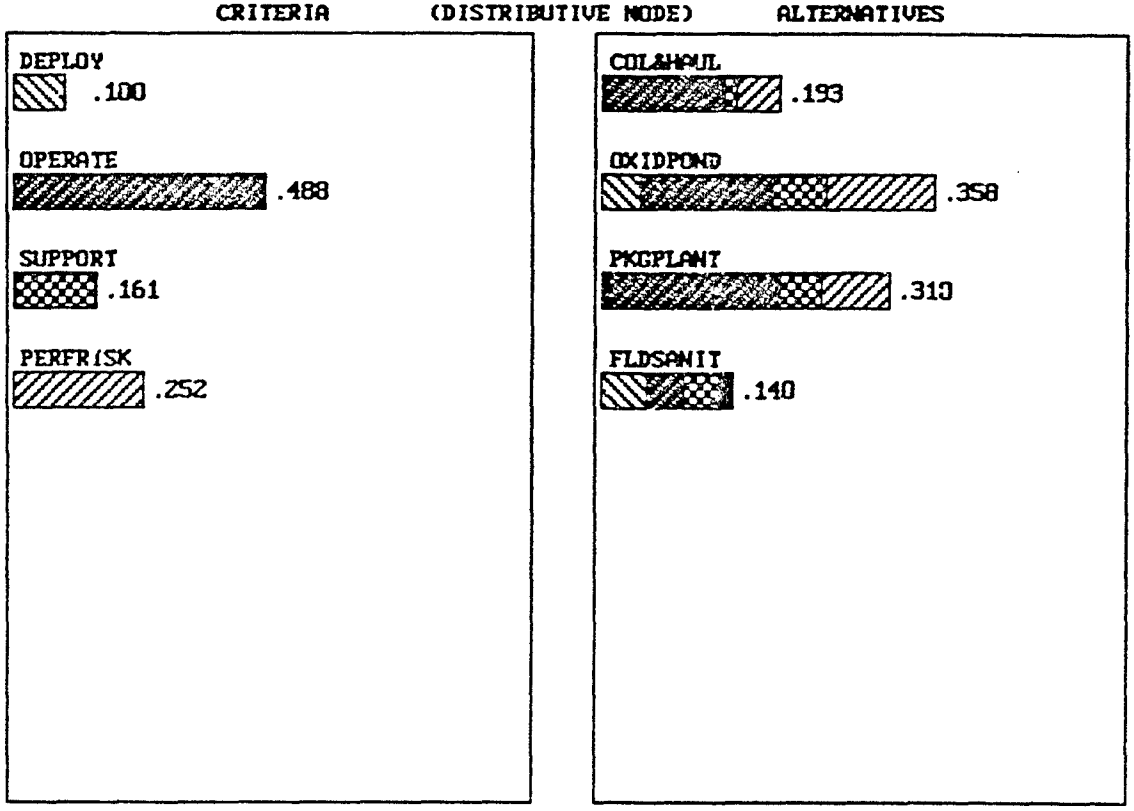

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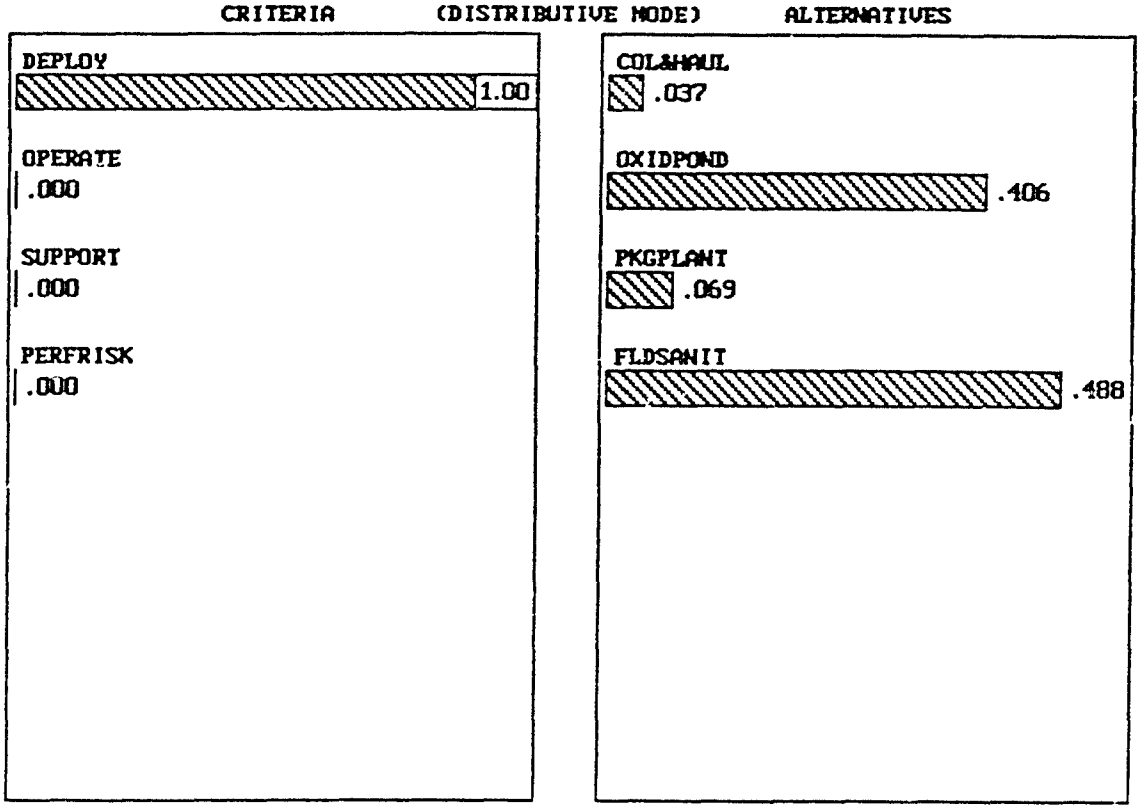

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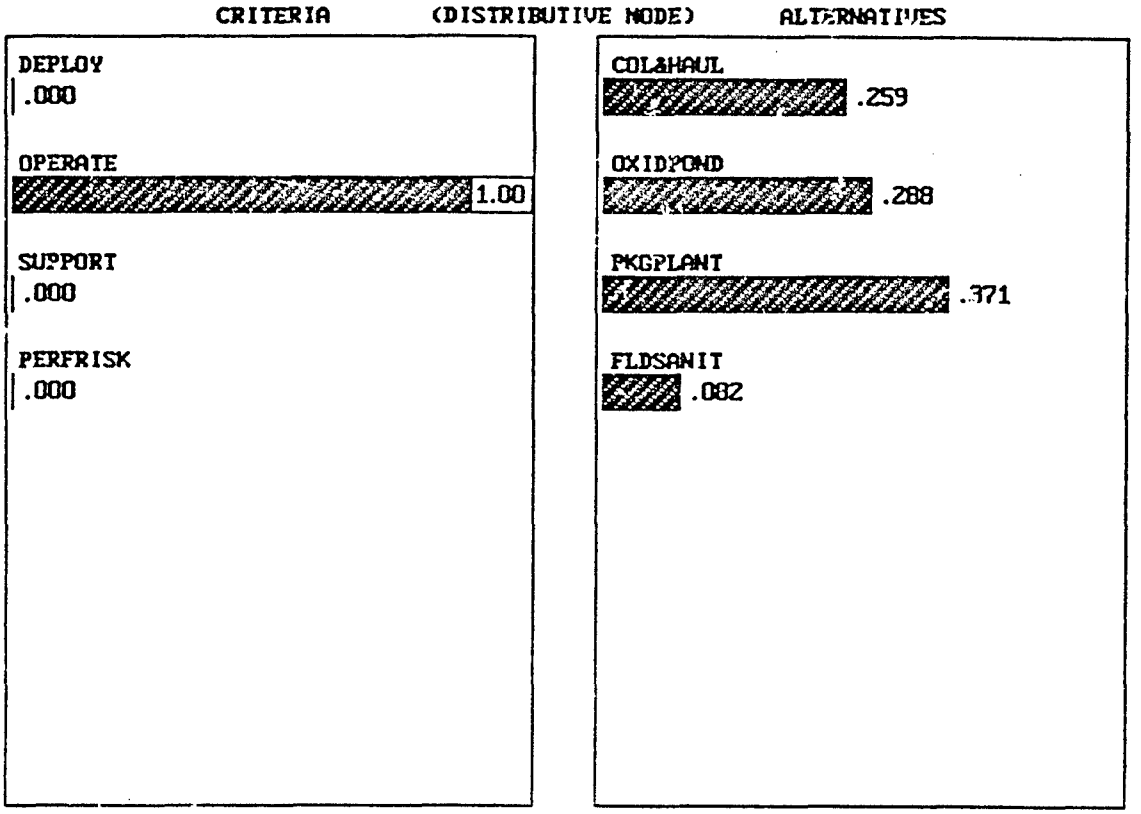

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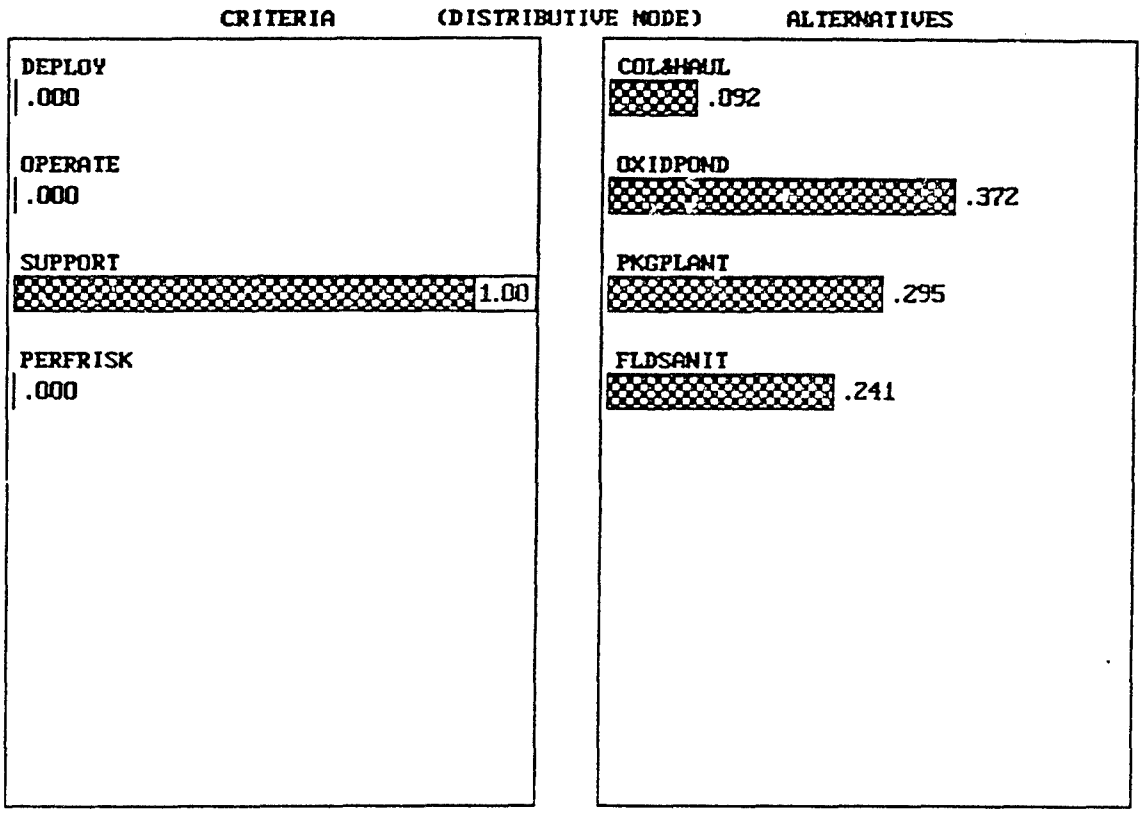

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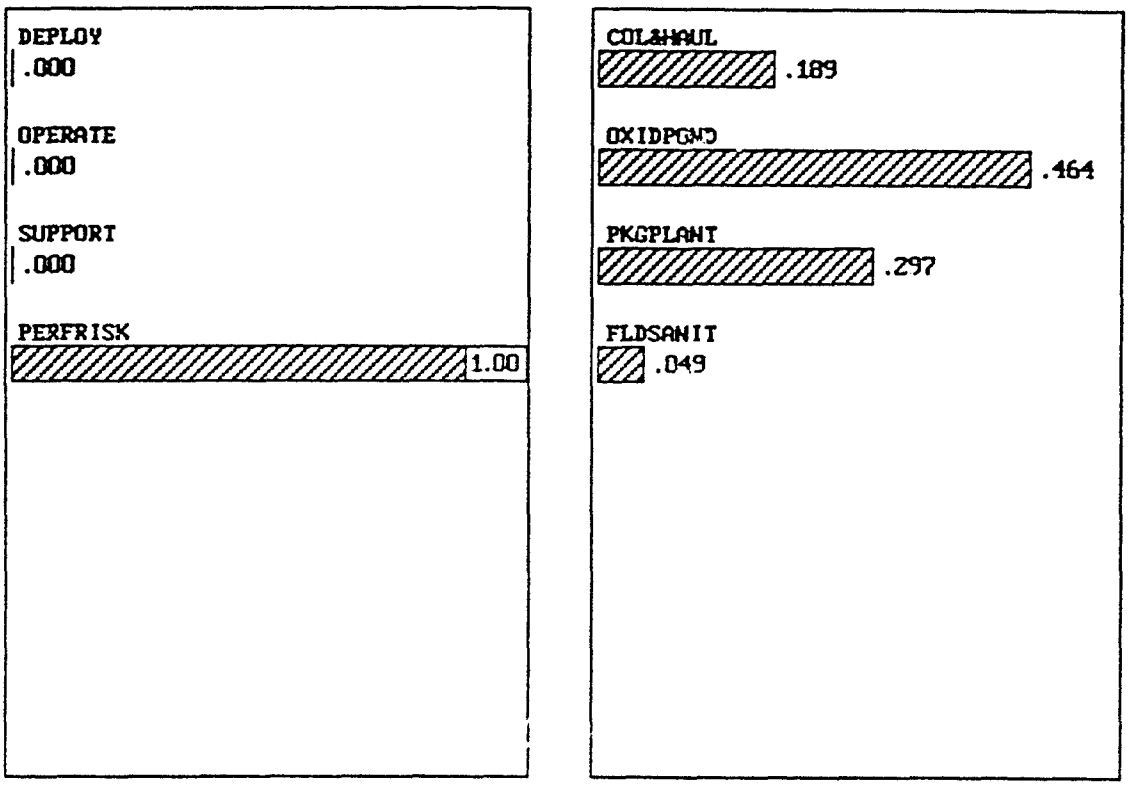

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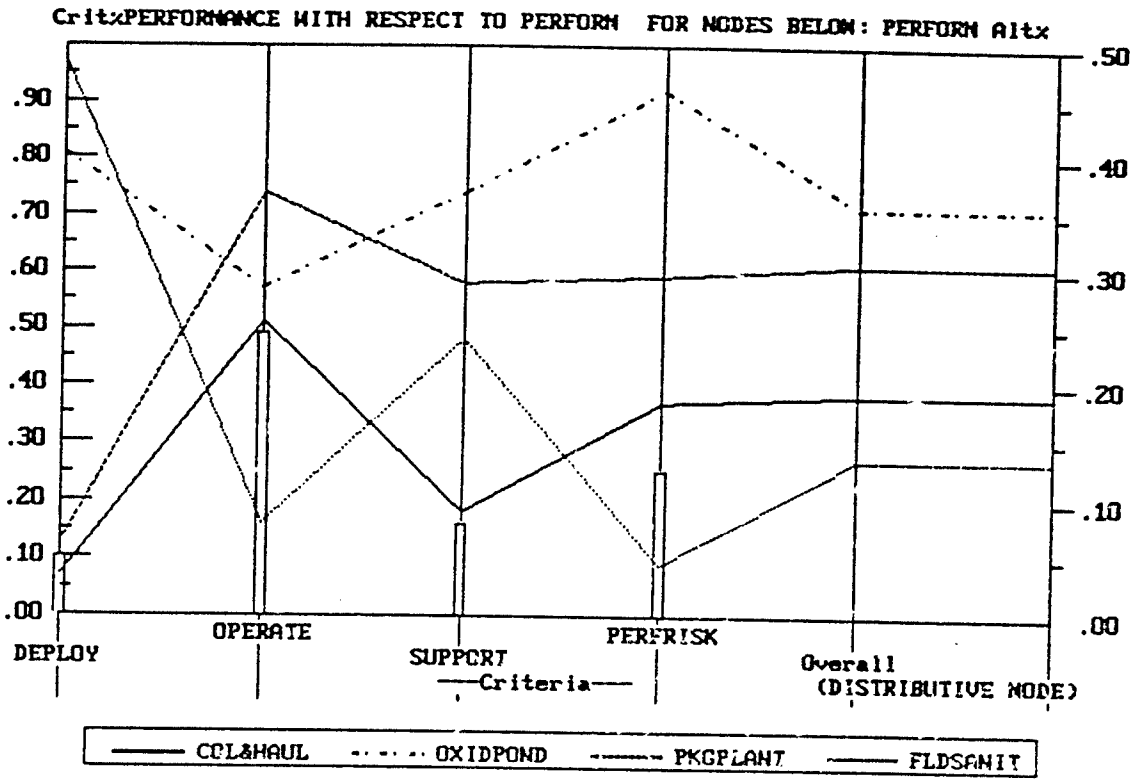

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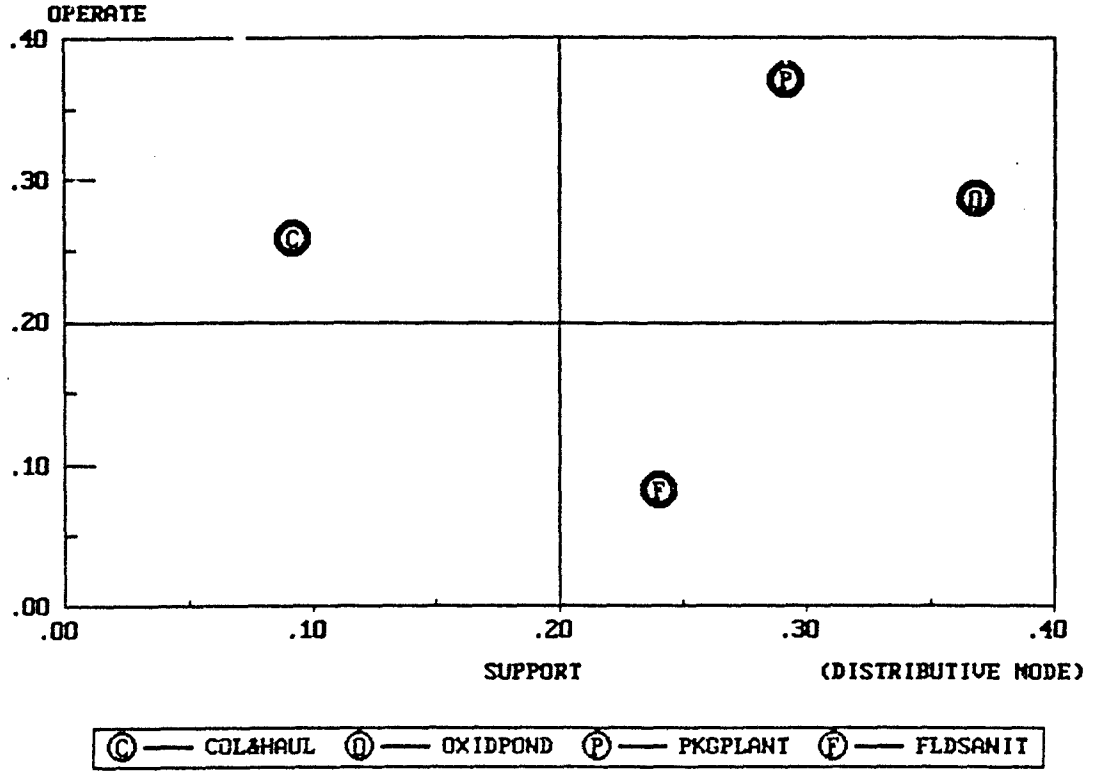

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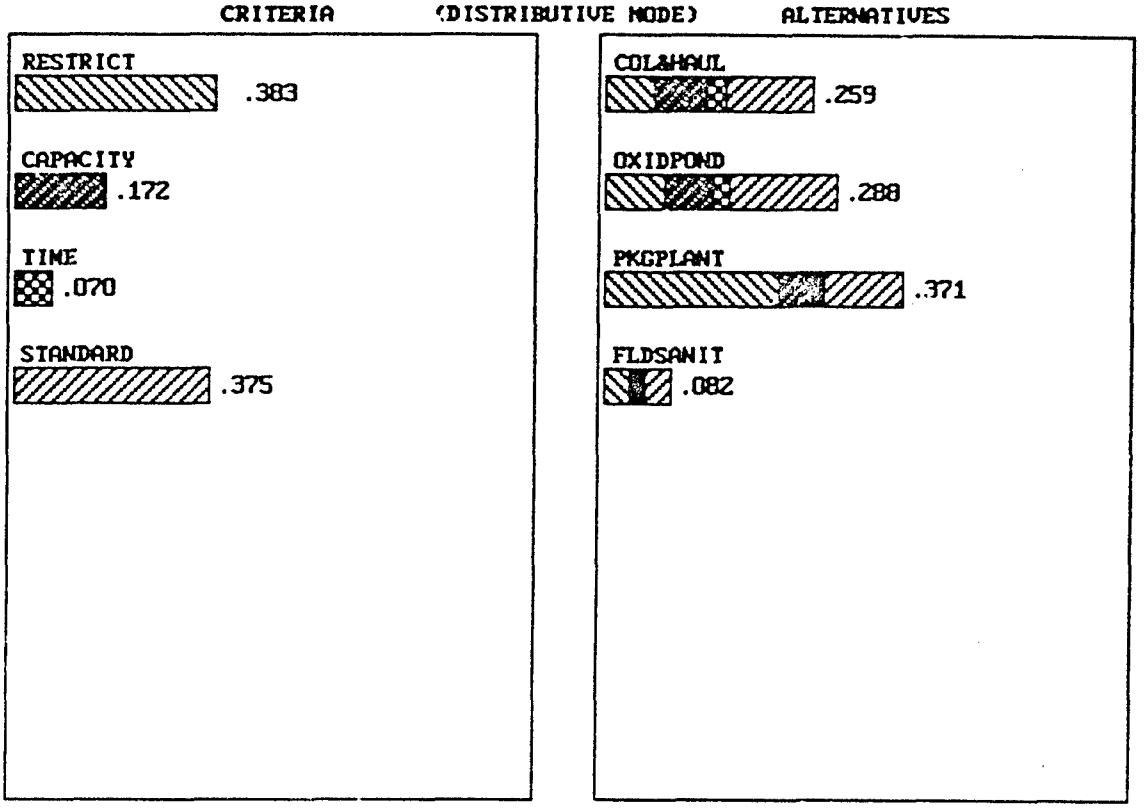
CRITERIA
(DISTRIBUTIVE MODE)
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RESTRICT
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CAPACITY
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TIME
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STANDARD
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COL&HAUL
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OXIDPOND
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PKGPLANT
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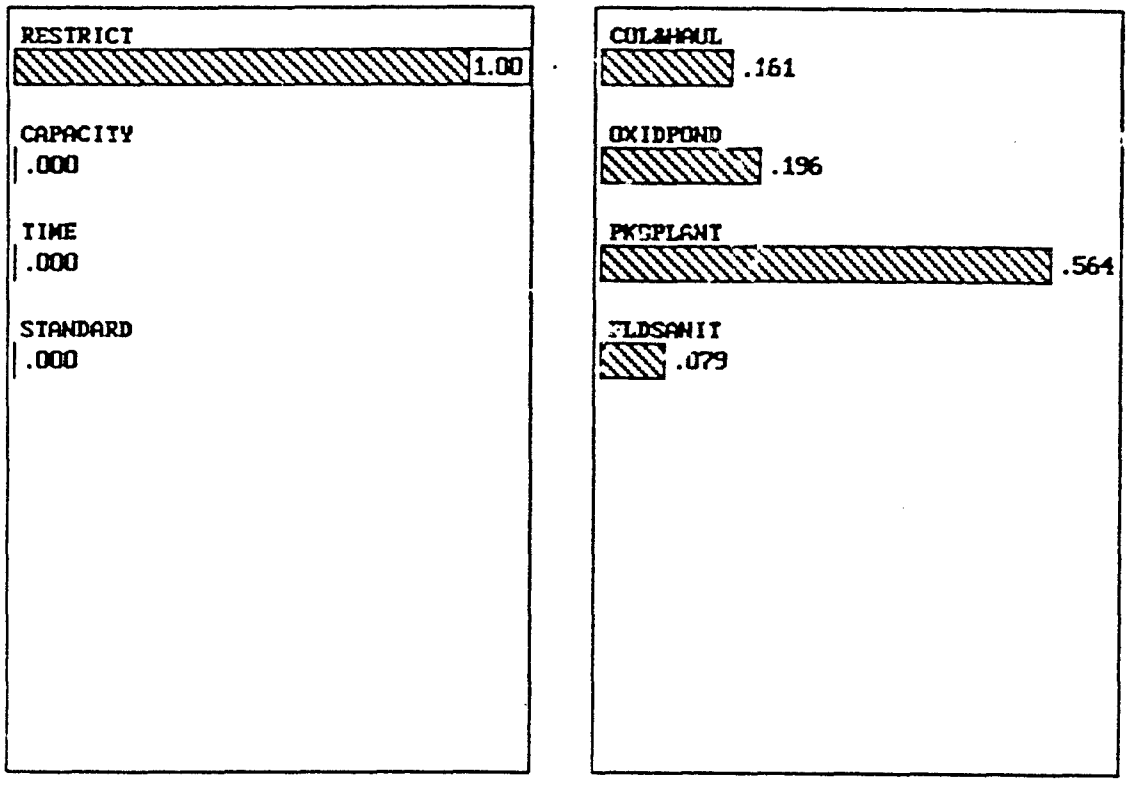
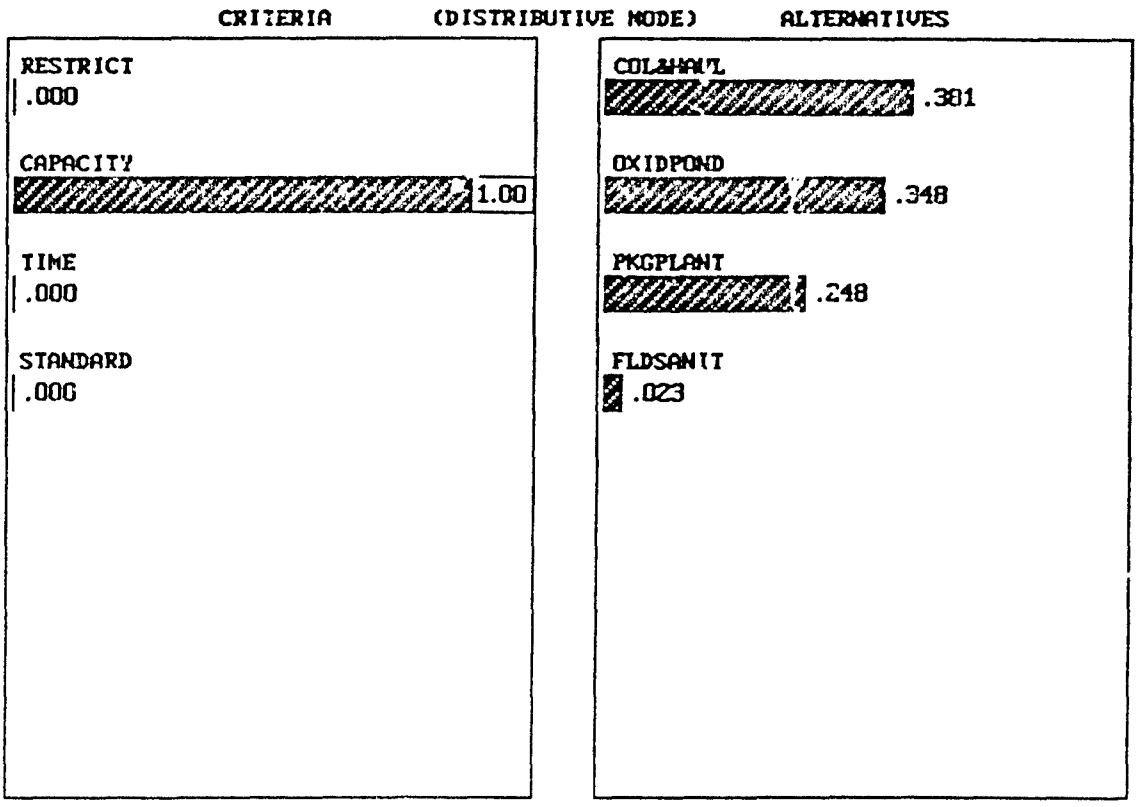


GALLICN, BRTRC Technology Research Corporation



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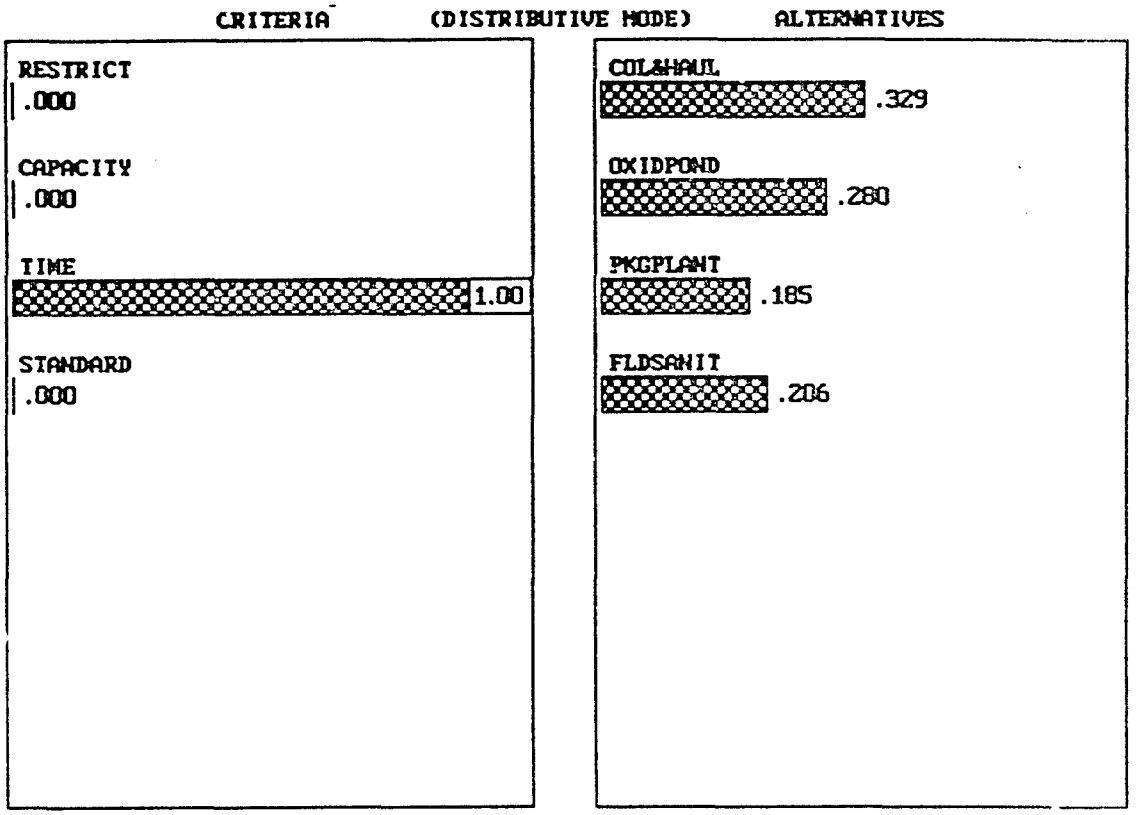

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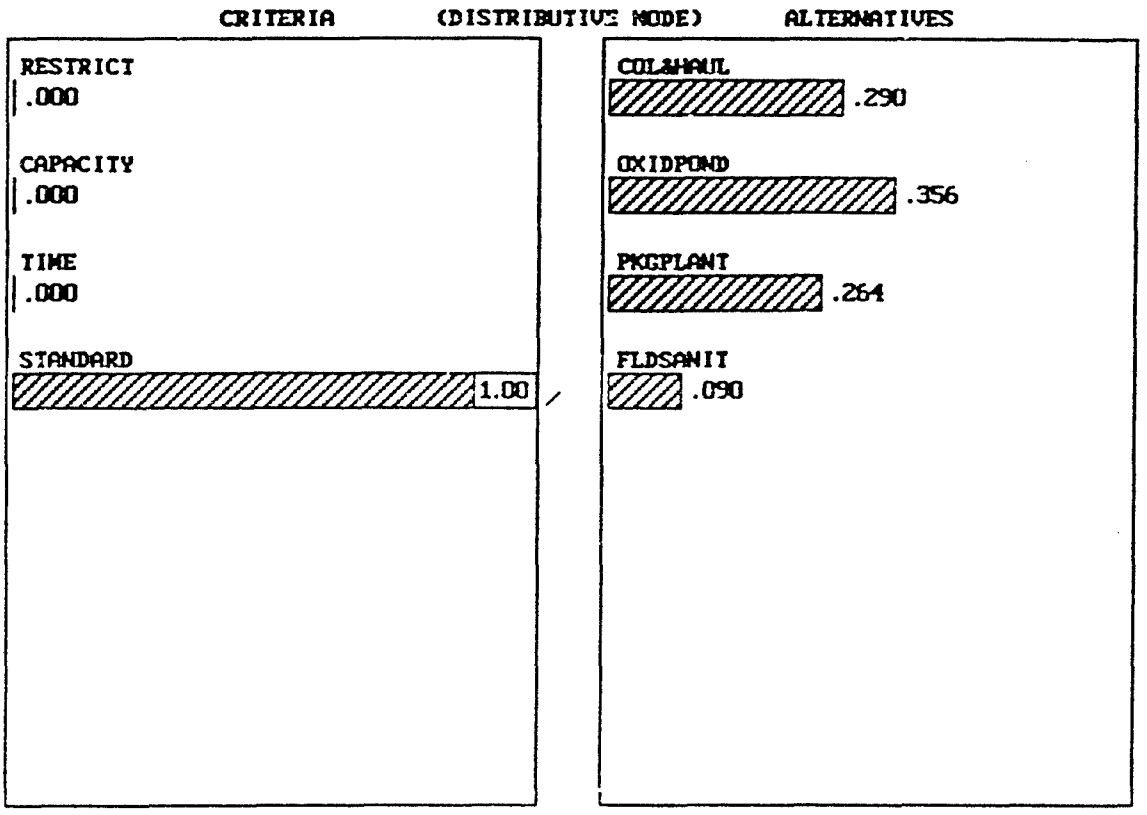

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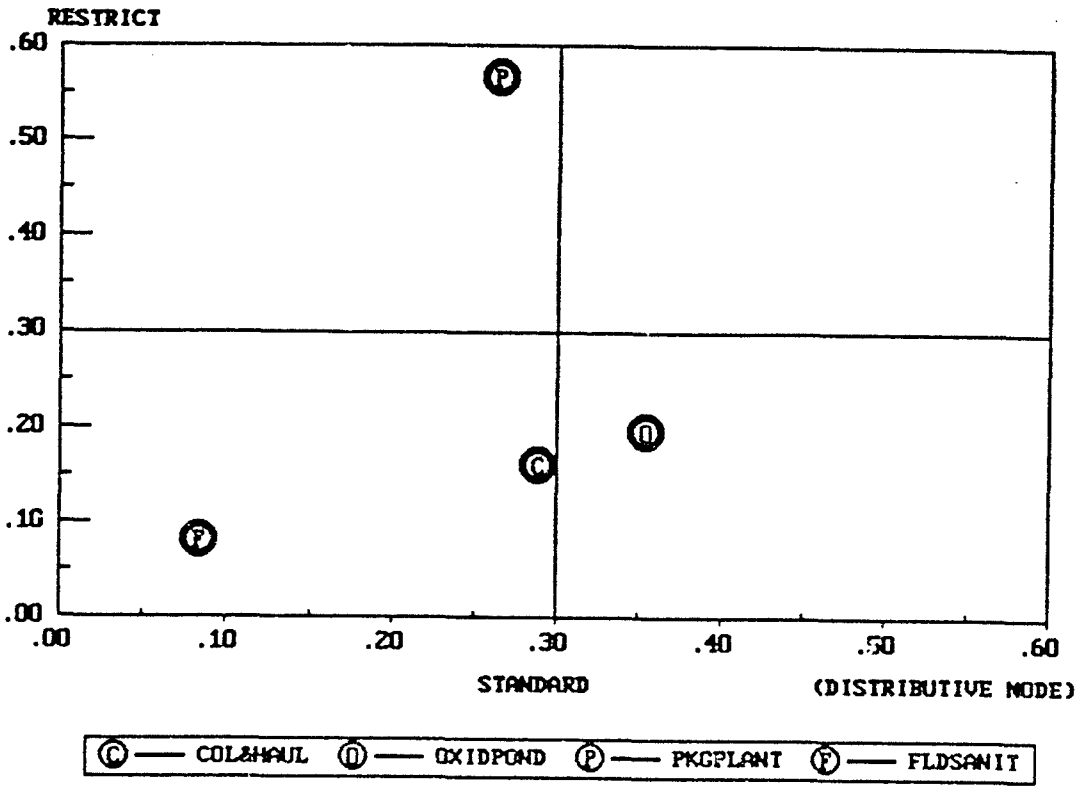

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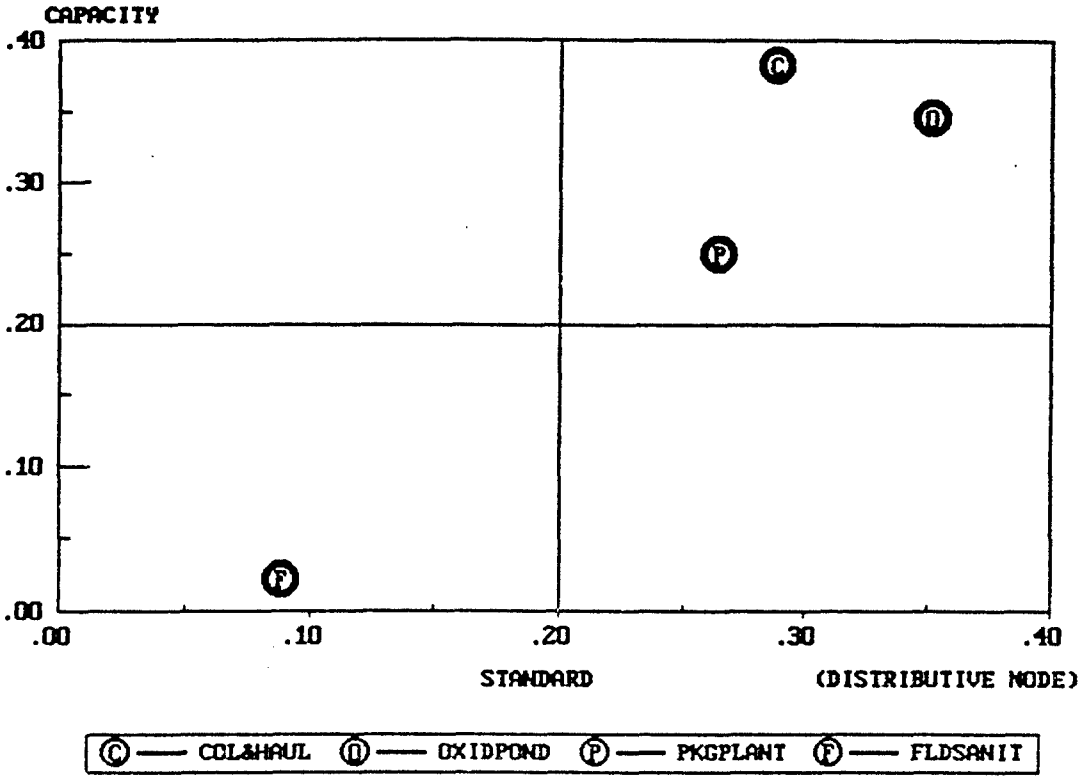

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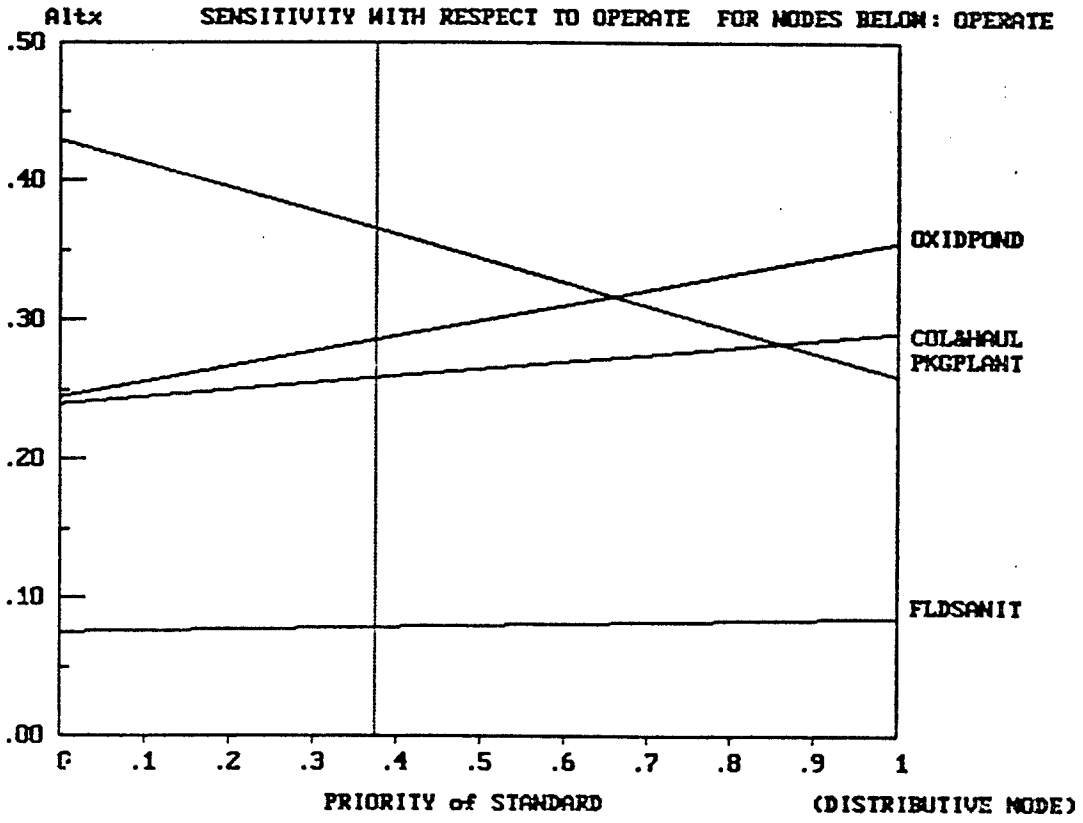
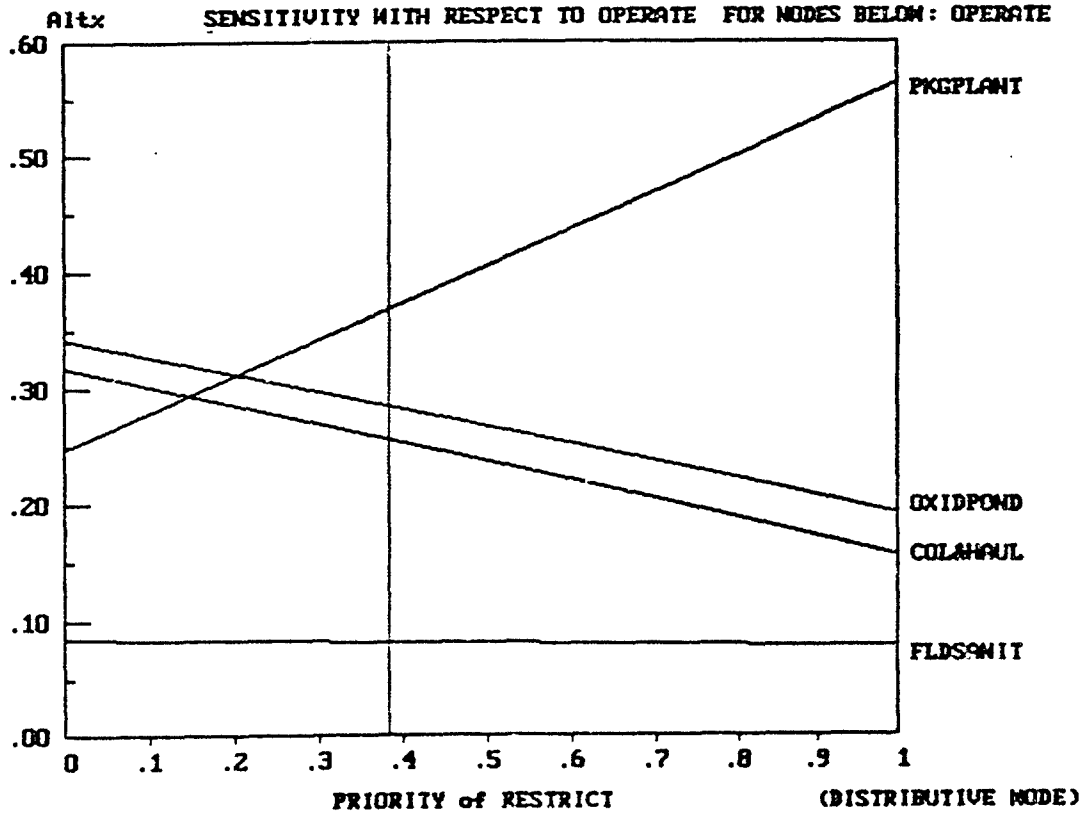
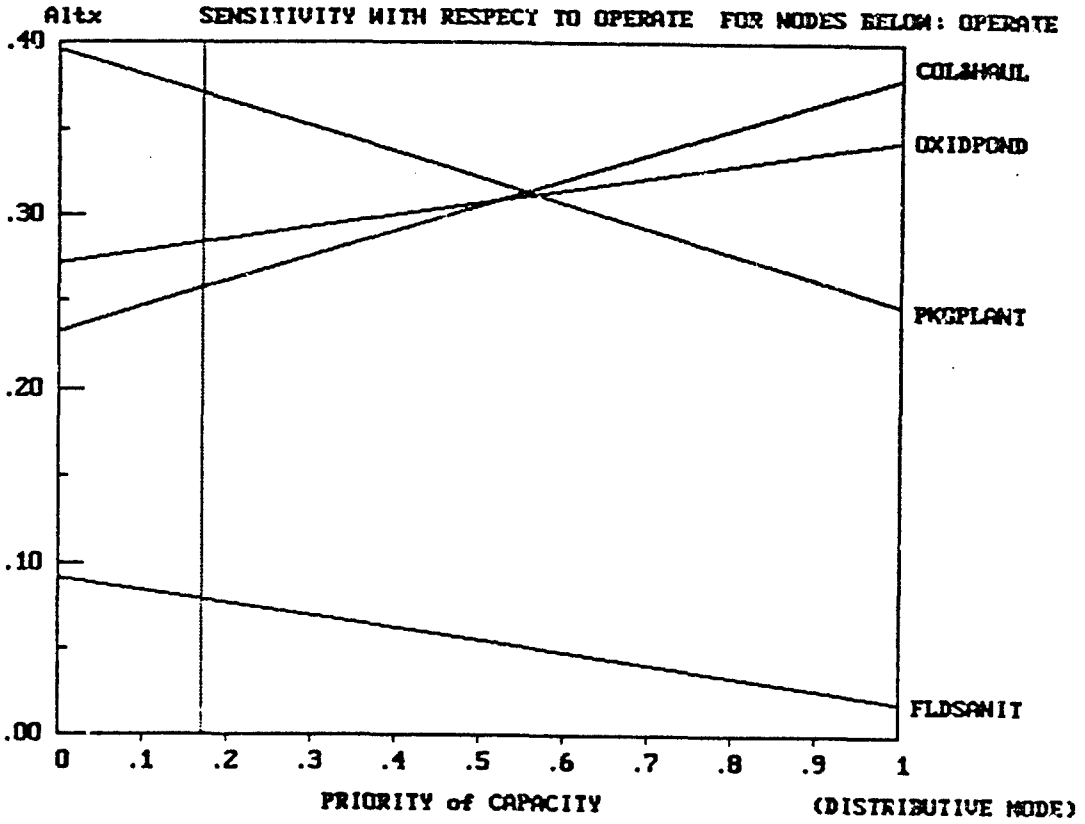


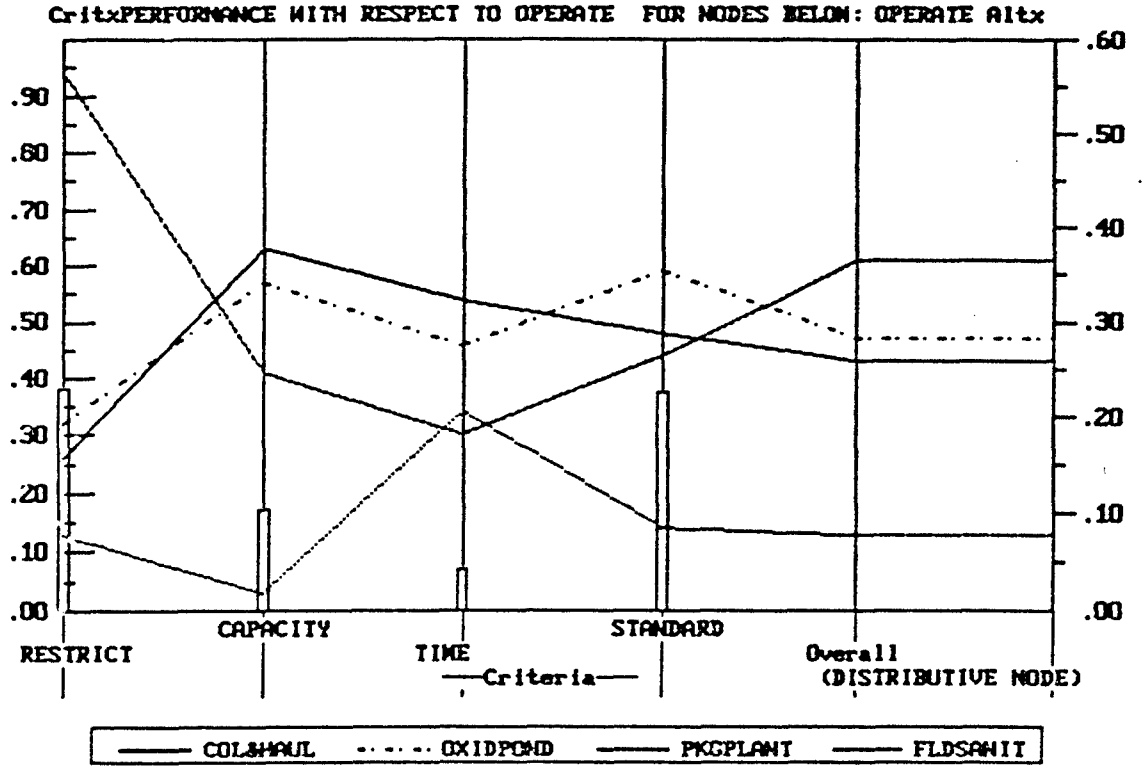
C. GALLION, BRTRC Technology Research Corporation



C. GALLION, BRTRC Technology Research Corporation



C. GALLION, BRTRC Technology Research Corporation



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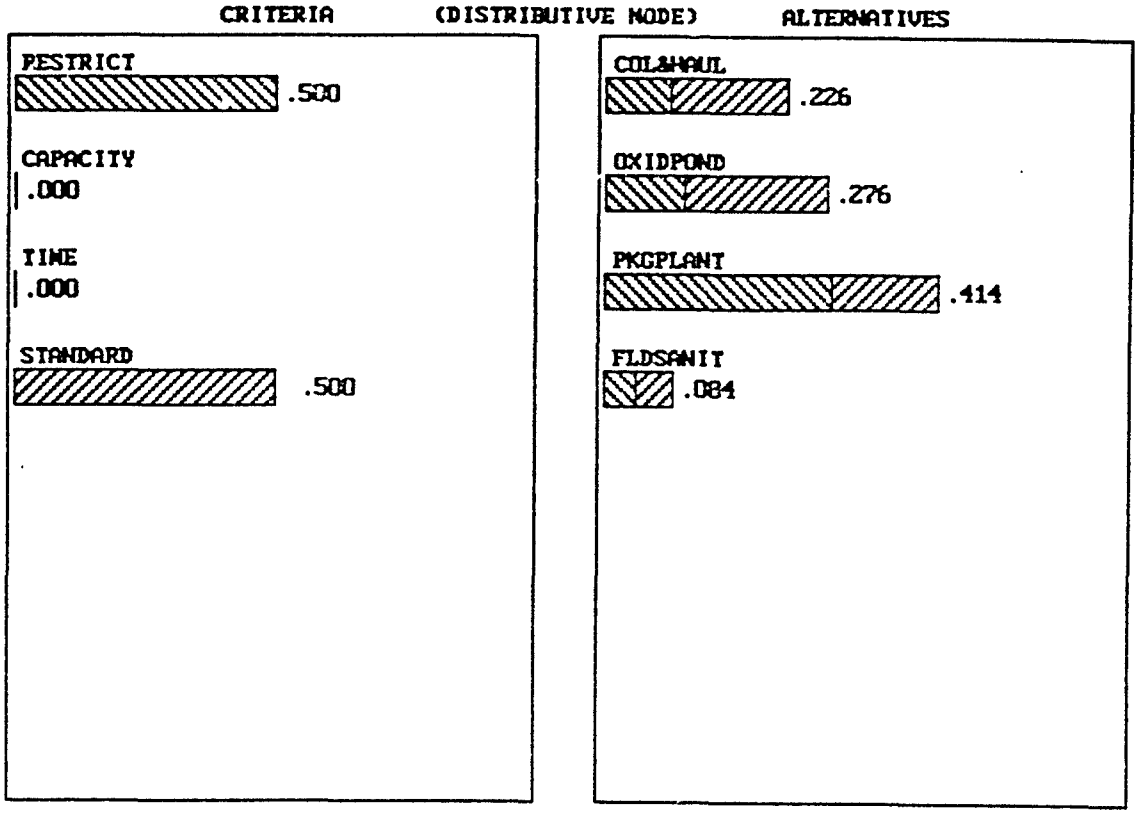

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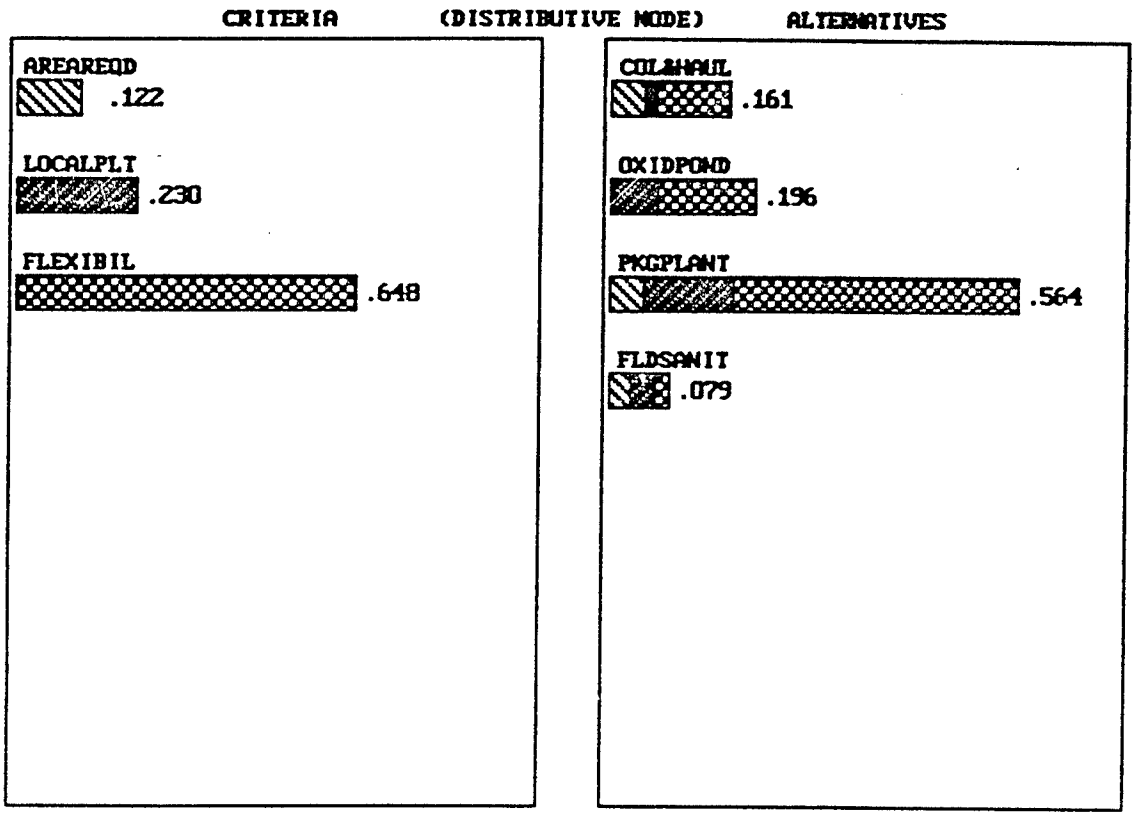

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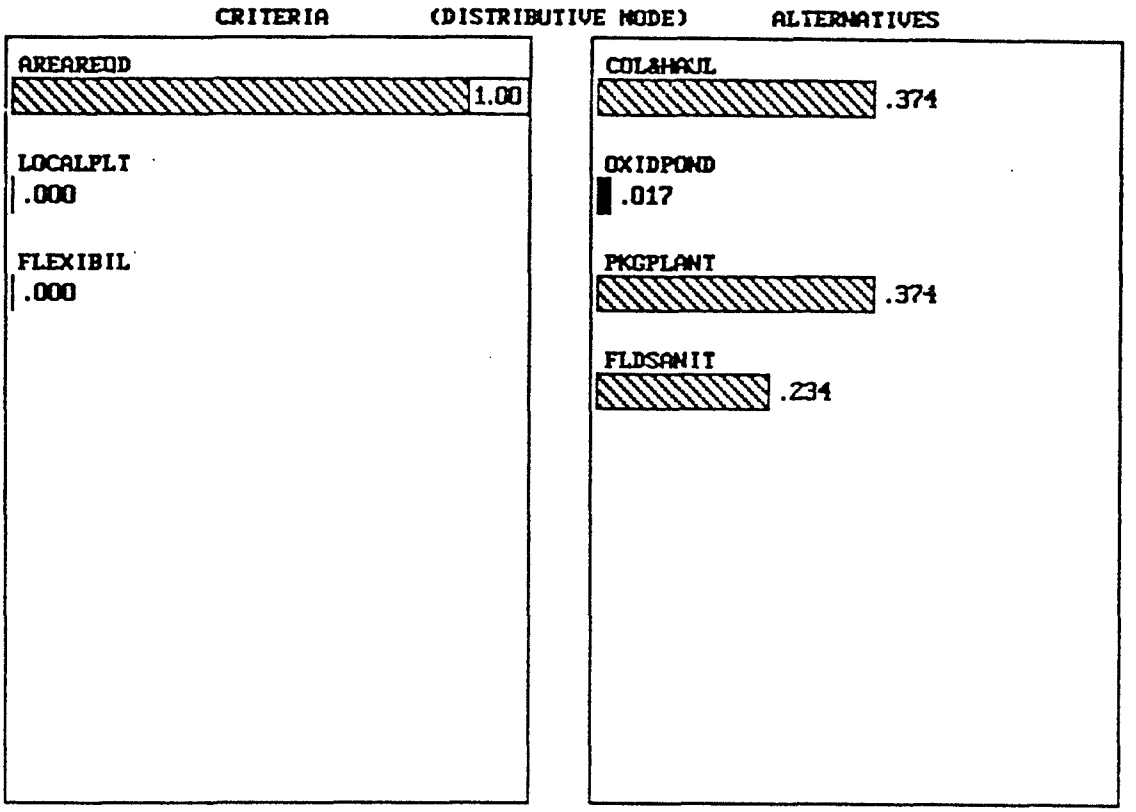

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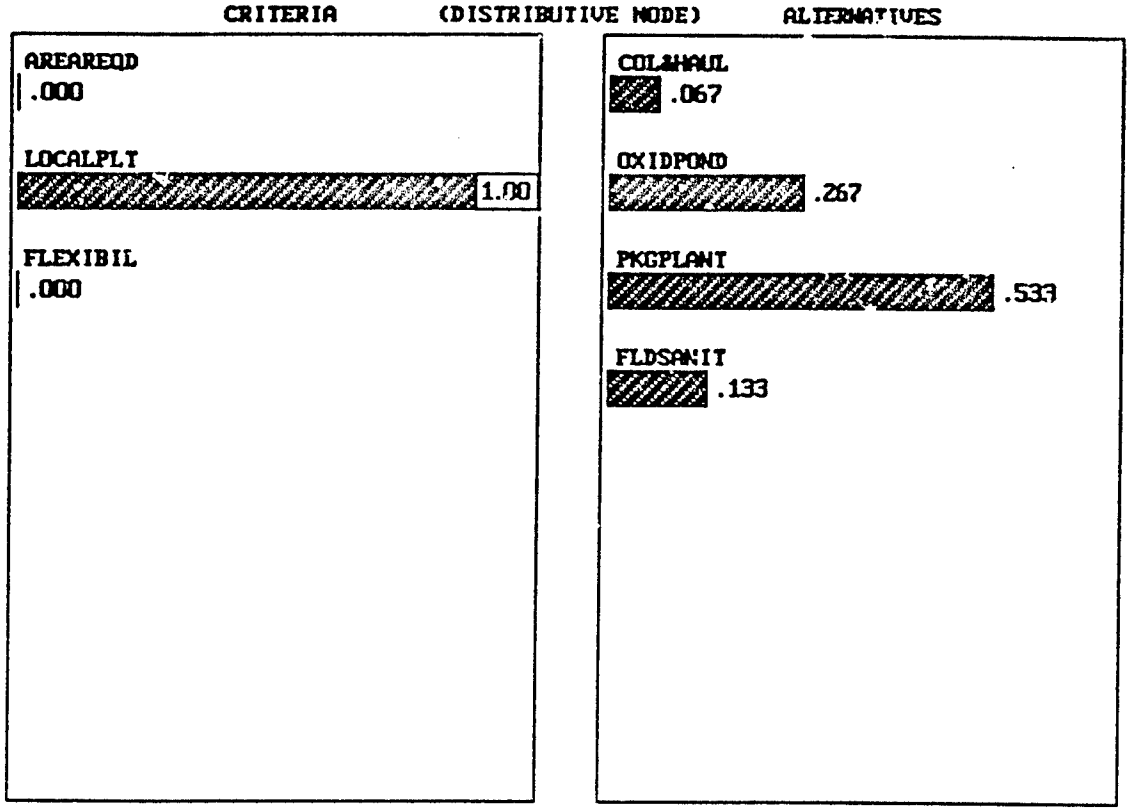

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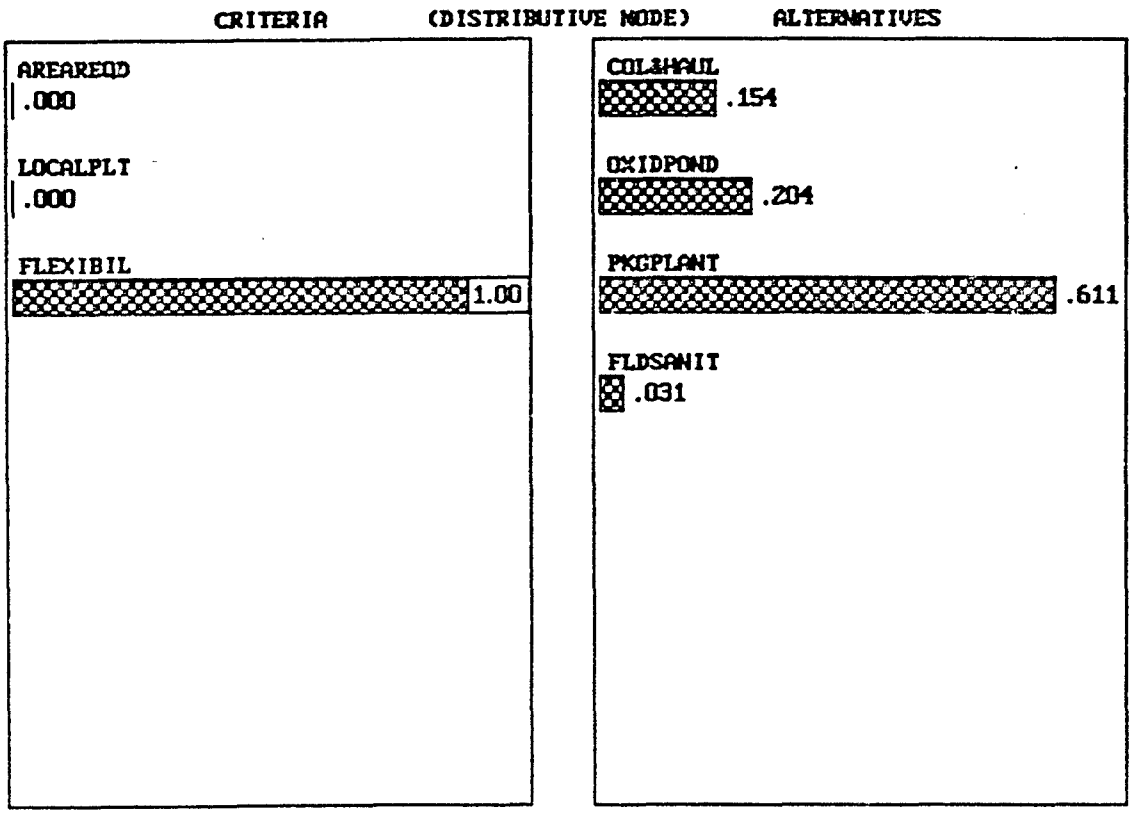
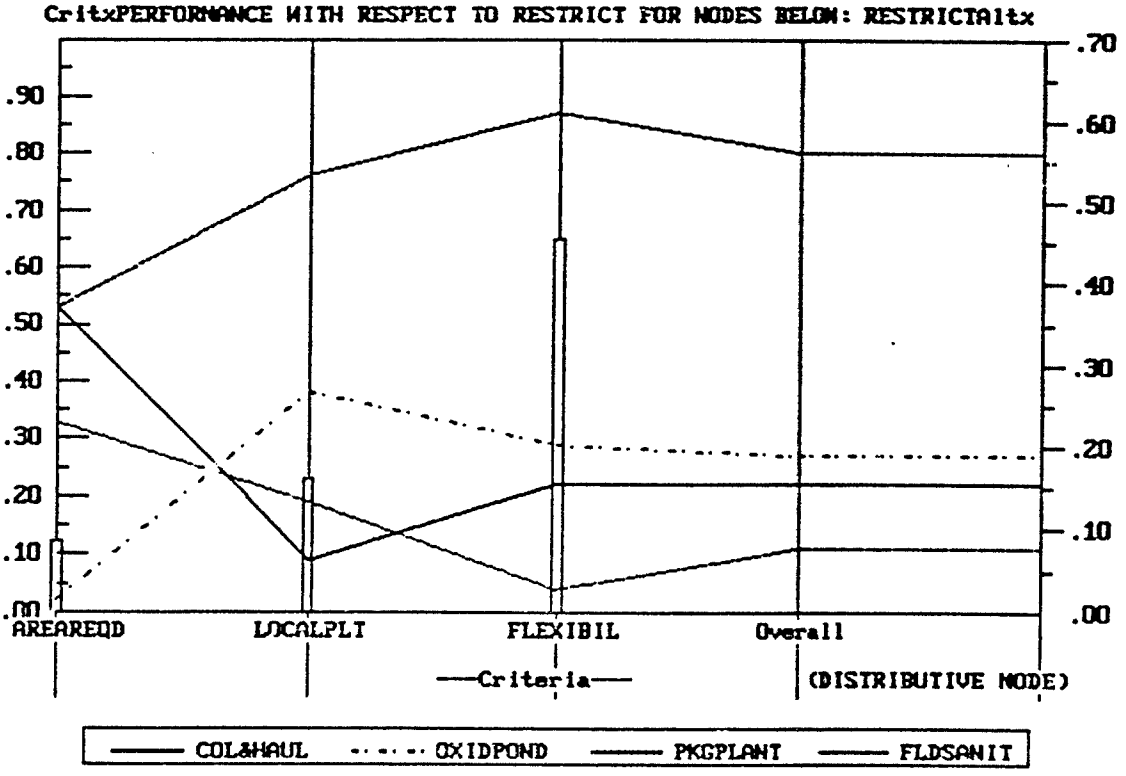


C. GALLION, BRTRC Technology Research Corporation



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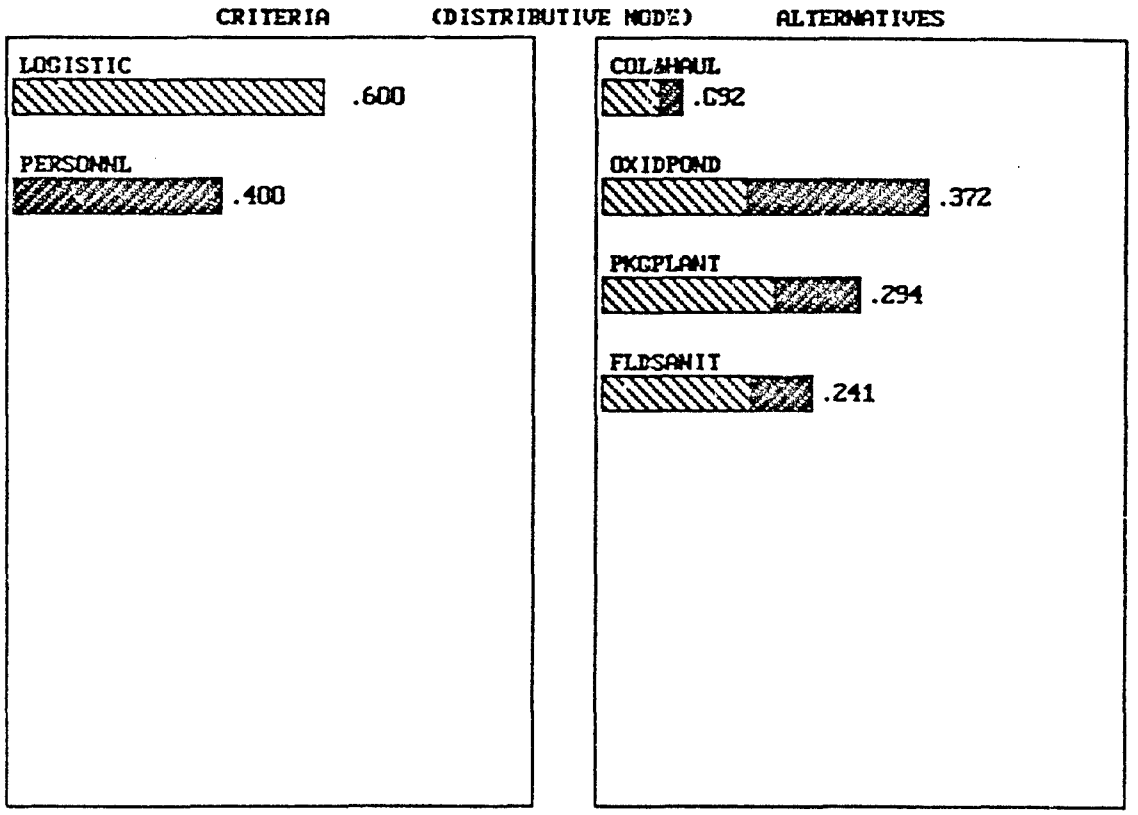

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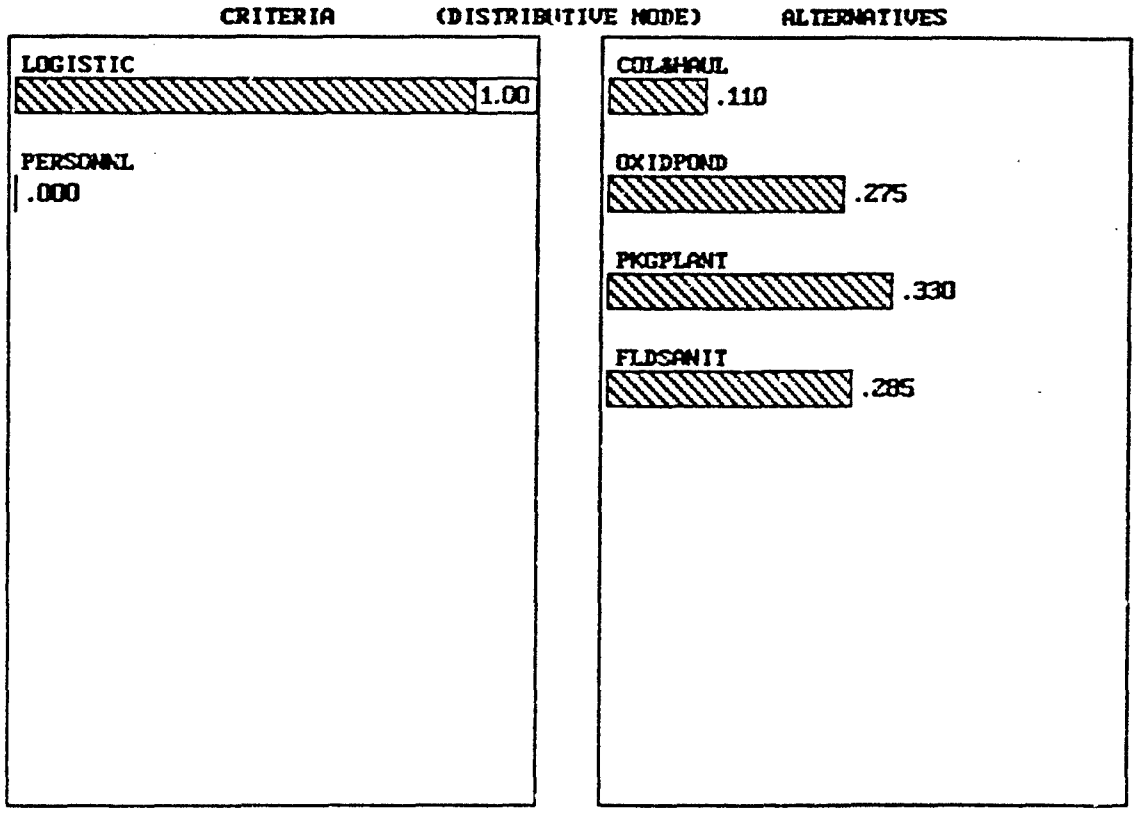

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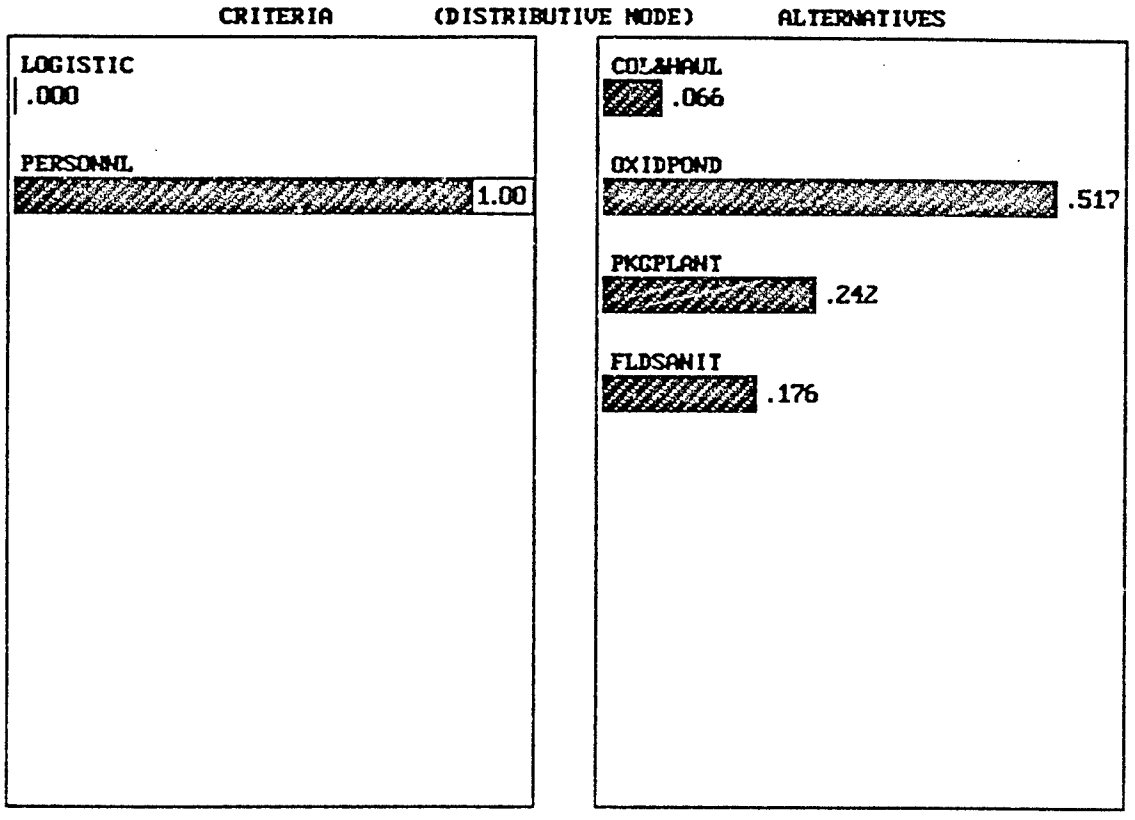

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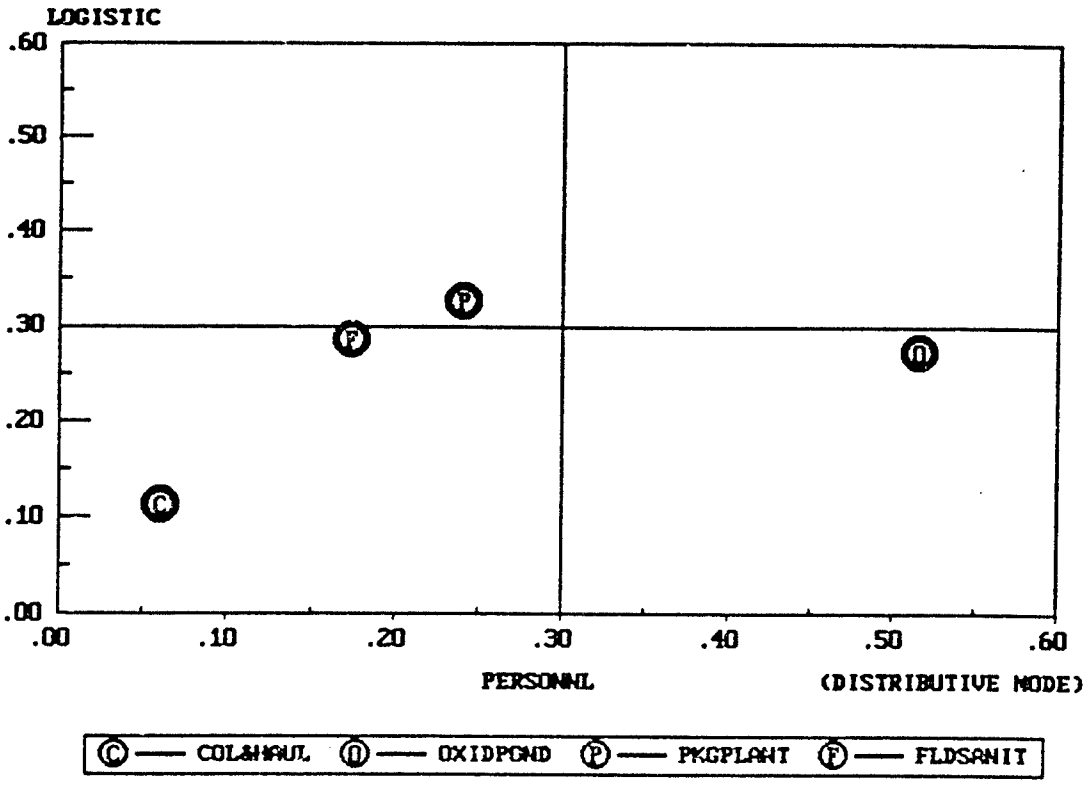

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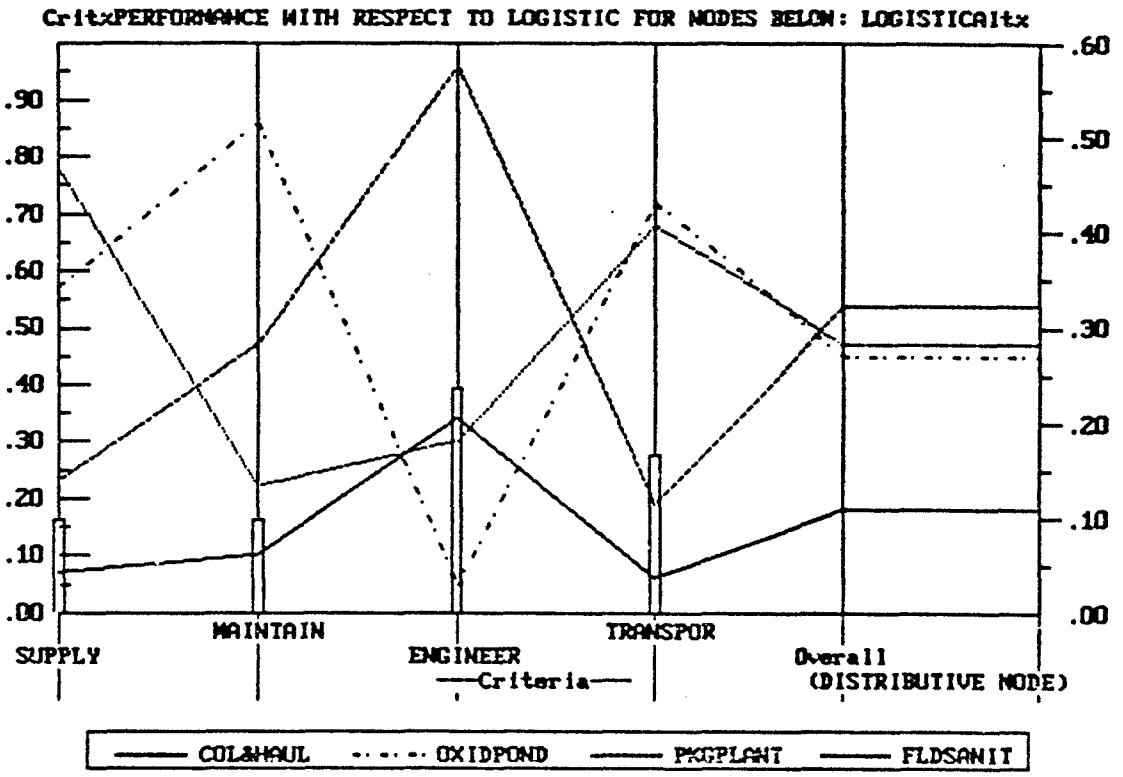

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